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A MEDICAL SURVEY IN PAPUA: REPORT OF THE FIRST EXPEDITION BY THE SCHOOL OF PUBLIC HEALTH AND TROPICAL MEDICINE TO PAPUA, 1935.

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INTRODUCTION.

FROM time to time information has been desired concerning the diseases common to the Papuan native. Such knowledge has a wider application than the mere amassing of statistical data, and would frequently be invaluable to the anthropologist.

Sir Hubert Murray (1922)⁽¹⁾ has drawn attention to the problems of depopulation occurring in Eastern Papua, and in 1933 F. E. Williams, Government Anthropologist,⁽²⁾ considered that, in the Suau district at least, the problems of depopulation "may ultimately be found to have a medical origin".

During 1912-1913 A. Breinl⁽³⁾ conducted a survey of the coastal belt of Papua with the object of enumerating the forms of disease to be seen in those areas. At the time such information was of inestimable value, as no previous record had been published of the diseases of Papua. Breinl's survey placed before the medical world some hitherto undescribed conditions, but gave no indication of the village to village incidence and incident rate of any of the diseases found. This in nowise detracts from the exceptionally high standard of the work achieved by Breinl when it is remembered that twenty years ago many sections covered by that patrol had had scarcely any contact with white men.

Early in 1935 the Papuan Administration invited the School of Public Health and Tropical Medicine to dispatch a medical expedition to Papua.

The main work undertaken by that expedition was a village to village survey of a specified area in the western portion of the Central Division of Papua. The object of the survey was to obtain factors of

health and disease amongst a virile, vigorous people living in a well populated area. The results obtained were to be used later for comparison in a survey of the depopulated areas of Eastern Papua.

The survey occupied two months, about 400 miles were covered, and some 5,000 natives were seen and examined. In addition to the medical inquiries, material was collected upon native customs likely to have a bearing on health and disease.

THE TERRAIN COVERED BY THE EXPEDITION.

The administrative policy of Papua has allowed for the thorough development of the coastal fringe with gradual extension of governmental influence into the hinterland.

Sixty miles to the west of Port Moresby is a remarkably fertile strip of land through which winds the Angabunga River. This plain has been laid down through the ages by silt deposited by the river, and now it offers a home to some 3,000 natives of the Mekeo tribe. The fertility of the soil is renowned, and almost anything grows with the minimum of labour and effort.

Along the coast and coastal streams dwells another tribe of natives, the Roro, who are to be distinguished from the Mekeo by slight differences in language, customs and dress. The area occupied by these two tribes roughly forms a rectangle ten miles wide along the coast and forty-five miles deep running back into the foothills.

Behind the coastal strip the mountain spurs gradually rise up to the Main or Owen Stanley Range. The ascent is at first abrupt up to 1,500 feet; thence the rise is more gradual until the peaks of Edward Albert are reached at 12,000 feet. Very few natives live in the foothills, and even from 1,500 to 4,500 feet the numbers are small, but the population becomes much more numerous from 5,000 to 7,000 feet.

The final stage of the survey was undertaken at an altitude of 7,000 feet in the Gailala Valley, under the shadow of the lofty peaks of central Papua, a region where the mountains rise abruptly to 12,000 feet, while from their sides plunge fast running streams of icy-cold water.

THE NATIVES.

The natives can be divided into coastal, sub-coastal and mountain groups.

Coastal or Roro Tribe.

The natives of the coastal or Roro tribe are living in villages on the shore or on the banks of estuaries. Fishing and the pursuits of the sea claim a considerable portion of their time, but in addition they cultivate gardens, growing bananas (plantain), sweet potatoes and yams. Pottery manufacture is well established amongst the women.

Subcoastal or Mekeo Tribe.

The natives of the subcoastal or Mekeo tribe inhabit some dozen villages scattered at irregular intervals along the shores of the Angabunga River. They are essentially agriculturalists, although

periodically the menfolk engage in a little collective hunting. The women in their spare time make rope bags, many of which are used for barter.

Mountain Tribes.

The natives of the mountain tribes live in small villages, generally perched high up on a ridge—a relic of the days of inter-tribal fighting. They cultivate their gardens, raising large crops of sweet potatoes and sugar-cane.

The mountain tribes can be divided into two distinct classes of people, not upon ethnological grounds, but according to the degree of contact with white civilization.

About thirty years ago fearless Fathers of the Sacred Heart Mission gradually penetrated further and further into these uninviting mountains, building as they went a well graded mule track, and today that road has penetrated 120 miles into the mountains. The road has attracted many travellers, government officials, scientists and anthropologists, whilst the missionaries themselves travel the road at frequent intervals. This road presents an easy access to Mount Edward Albert, the Mecca of not a few scientific expeditions. All this traffic has left its mark upon the natives living adjacent to the road—for upon them has fallen the burden of transport. Their answer to this was definite and conclusive; those who could moved their homes further into the jungle, and today few remain within easy reach of the rest-houses scattered along the road. This is most noticeable between the coast and Mafulu; the natives beyond Mafulu have less opportunity for scattering. Such are the conditions found along the mission road. When one leaves this road and follows a native path over the ridge into the adjoining valley, one encounters another type of mountain people. Although belonging to the same tribe as the former, these natives are externally different—more friendly, increasing in numbers, and freer from disease.

RESULTS OF THE SURVEY.

The results of the survey are set out in Tables I, II and III and are summarized in Table IV.

The first section in Tables I, II and III sets out the population examined and shows the percentage this bears to the census population. In some villages the percentage of absentees was high, some of whom deliberately avoided the examination, but many were away trading, fishing or working on plantations.

The second section sets out the number of cases of each disease noted in each village. In the final column the splenic index is given. The splenic index is calculated as the percentage of children with enlarged spleen found in the total child population.

THE DISEASES ENCOUNTERED.

The diseases encountered can be divided into: (i) indigenous diseases, (ii) diseases of recent introduction, (iii) mixed surgical and medical diseases, (iv) items of medical interest.

TABLE I.
Analysis of the Roro Tribe.

Village.	Vital Statistics.							Incidence of Disease.									Splemic Index in Children.	
	Total Population Seen.	Census Population.	Percentage of Possible Population Seen.	Males.	Females, C.B.A.	Females, N.C.B.A.	Children One to Twelve Years.	Infants Under One Year.	Yaws, 1st.	Yaws, 2nd.	Yaws, 3rd.	Tropical Ulcer.	Tinea.	Leprosy.	Miscellaneous Surgical.	Miscellaneous Medical.		Chest Lesion.
Chirria	134	355	37	36	27	4	57	10	12	1	1	1	7	—	12	—	—	60
Delena	53	370	14	8	10	5	28	2	—	—	—	1	1	—	1	—	—	68
Pinupaka ..	111	185	60	34	25	7	44	1	1	1	—	1	3	—	—	—	30	
Mou	155	250	62	54	33	5	59	4	12	5	—	1	10	—	—	—	52	
Iapa	187	267	70	64	38	11	63	11	—	—	—	1	26	—	1	—	44	
Babiko	105	151	69	26	20	10	48	1	4	5	—	—	12	—	—	—	64	
Bioto	120	234	51	33	31	7	43	6	1	6	4	1	8	—	—	—	100	
Total	865	1,812	47	255	184	49	342	35	10	33	24	6	67	—	9	4	16	

C.B.A. = Women of child bearing age.

N.C.B.A. = Women of non-child-bearing age.

TABLE II.
Analysis of the Mekeo Tribe.

Village.	Vital Statistics.								Incidence of Disease.									Splemic Index in Children.
	Total Population Seen.	Census Population.	Percentage of Possible Population Seen.	Males.	Females, C.B.A.	Females, N.C.B.A.	Children One to Twelve Years.	Infants Under One Year.	Yaws, 1st.	Yaws, 2nd.	Yaws, 3rd.	Tropical Ulcer.	Tinea.	Leprosy.	Miscellaneous Surgical.	Miscellaneous Medical.	Chest Lesion.	
Inauwae	47	74	63	7	14	2	21	2	—	12	3	—	5	—	1	1	—	100
Inawi	349	478	73	115	65	16	132	21	9	50	3	4	50	—	—	—	—	100
Beipa	473	623	75	131	100	45	180	17	6	53	3	14	98	3	2	3	2	100
Alpeana	306	450	68	88	55	24	120	19	3	40	4	7	29	1	1	1	1	100
Amo Amo	110	136	80	35	21	13	35	6	—	9	4	—	25	1	1	1	1	100
Rarai	249	335	74	75	47	27	89	11	—	16	3	1	60	—	—	4	2	100
Inauwani	180	215	83	42	44	17	70	7	—	9	3	—	33	—	—	—	—	100
Bebeo	89	121	73	22	24	3	25	9	—	3	—	—	13	—	—	—	—	100
Oriopetana ..	126	190	66	39	20	14	52	1	2	9	—	—	19	1	2	3	1	82
Iesubabua ..	159	224	71	56	37	9	48	9	4	24	6	—	16	—	—	—	—	100
Inauai-a	200	335	59	60	44	6	82	8	3	23	4	3	22	—	1	—	—	100
Eboa	175	327	53	63	45	12	50	5	1	12	4	—	20	—	—	—	—	100
Inauabul	149	358	41	55	27	10	47	10	2	12	1	1	15	—	—	—	1	100
Total	2,612	3,866	67	789	543	204	951	125	36	262	53	31	405	7	13	19	24	

C.B.A. = Women of child bearing age.

N.C.B.A. = Women of non-child-bearing age.

TABLE III.
Analysis of the Mountain Tribes.

Tribe.	Vital Statistics.								Incidence of Disease.						
	Altitude (feet).	Village or Village Group.	Population Seen.	Males.	Females, C.B.A.	Females, N.C.B.A.	Children One to Twelve Years.	Infants under One Year.	Yaws.	Thoa.	Miscellaneous Surgical.	Miscellaneous Medical.	Chest Lesions.	Number of Children with Enlarged Spleen.	Goitre.
Kuni	2,000 to 4,000		216	88	41	22	54	11	—	—	—	—	—	—	—
Fugi	4,000 to 5,000		355	103	75	30	130	17	—	9	—	—	—	—	—
Ambo	5,000 to 7,000		113	49	19	5	44	4	—	5	1	—	—	—	—
		Ikuilwei	226	83	64	19	55	5	—	5	—	—	—	—	—
		Kone	217	76	47	21	62	11	—	7	1	1	—	—	—
		Goliala	588	184	135	44	198	27	—	8	1	1	—	—	—
Total			1,715	574	381	142	543	75	2	34	3	5	2	5 ¹	12

C.B.A. = Women of child-bearing age.

N.C.B.A. = Women of non-child-bearing age.

¹ These children had recently visited the coast.

TABLE IV.
Summary of the Incidence of the Diseases amongst the Three Tribes: 5,192 persons were seen (Roro 865, Mekeo 2,612, Mountain 1,715).

Disease.	Roro.		Mekeo.		Mountain.		All Natives.	
	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
Framboesia	67	7.6	350	13.4	2	—	419	8.0
Tropical ulcer	6	0.68	31	1.1	—	—	37	0.7
<i>Tinea flava</i> and <i>Tinea imbricata</i>	77	8.8	405	15.5	34	1.9	516	9.9
Leprosy	—	—	7	0.25	—	—	7	0.1
Miscellaneous, surgical	9	1.0	11	0.42	3	—	23	0.4
Miscellaneous, medical	4	0.46	19	0.73	5	—	28	0.5
Chest lesions	16	1.9	24	0.92	2	—	42	0.8
Goitre	—	—	—	—	12	—	12	0.2

Indigenous Diseases.

Framboesia.

First and foremost was frambœsia or yaws. Although no definite evidence was available, the data collected suggested that frambœsia was introduced into Papua from Polynesia by venturesome traders during the first half of last century. The early white settlers reported the disease in almost all coastal tribes. One or two tribes on the north-east coast had apparently escaped in the early days, but were subsequently affected. In contrast we found that the disease had made but little progress inland; altitude may explain this, but more probably it is the absence of that intimate contact between peoples of the mountain districts and the coast so necessary for the spread of this disease. The coastal native had till recent years always regarded the mountain man with great awe and fear. We were privileged to attend a mountain dance to which coastal natives had been invited for the first time. The dance is an occasion for intimate social contact between visitors and hosts. At the next village along the mountain road several severe cases of frambœsia were encountered—all in natives who had recently attended a dance visited by coastal natives. Living as these patients did at an altitude of 4,500 feet, suggests that altitude alone is not an absolute barrier to the spread of the disease.

Tables I and II indicate that 12.4% of the coastal and subcoastal population were, at the time of inspection, suffering from active frambœsia, 76% being in the secondary stage. The Mekeo and Roro tribes are patrolled at regular intervals of about three months, when all cases of frambœsia are treated by native medical assistants. The treatment is by one intramuscular (gluteal) injection of bismuth salicylate (0.48 gramme or eight grains per adult) dissolved in sterile olive oil.

Table V shows the age distribution of cases of secondary and of tertiary yaws, demonstrating the usual preponderance of secondary cases in childhood.

TABLE V.
The Age Distribution of Tertiary and Secondary Yaws.

Group.	Second Stage.	Third Stage.
Males	18	33
Females	21	19
Children	302	4
Totals	341	56

The tertiary stages were more common in adults, and the majority the result of incomplete treatment of the secondary stages.

All the various tertiary manifestations were encountered, including periostitis of the tibia, extensive cutaneous ulceration and scarring, peri-articular nodules, and plantar yaws.

Tropical Ulcer.

The heading of tropical ulcer was reserved for the specific phagedenic ulceration of the legs associated with the spirochætes and fusiform bacilli (considered to be the causal organisms of Vincent's infection), and does not include all the ill-defined ulcerations seen. The incidence of tropical ulcer was low—less than 1%—a figure to be expected in a population whose diet is good and varied. Almost all cases—certainly all the acute cases—were in young children. In other districts of Papua and New Guinea the greatest incidence of acute cases is in active young adults.

No cases were seen in the mountain districts. (This disease will be treated in greater detail in a subsequent paper.)

Tinea.

Two forms of tinea, *tinea imbricata* and *tinea flava*, were seen.

Tinea imbricata is widespread throughout the coastal tribes, affecting both young and old. A definite hereditary predisposition to the disease is the outstanding feature of its spread through the community. Some natives have an absolute immunity, a wife failing to infect a husband, or only certain of the children of one family exhibiting the disease. *Tinea imbricata* in the early stages produces a definite circinate lesion with an advancing scaly edge, but in older and more chronic lesions the serpiginous outline disappears and the body becomes covered with a mass of ragged scales, giving it a shaggy appearance. In some natives the fungus invades the whole epidermis, whilst in other long-standing cases the disease is localized to small areas.

In *tinea flava* the lesion commences in and around the hair follicles, producing small circular yellow dots with the hair in the centre. The analysis of the results showed that children under twelve did not suffer from *tinea flava*. Macleod has shown that there is increased activity of the sebaceous glands at puberty with the further development of the pilosebaceous system. The presence of excess sebum is

thus apparently essential for the growth of *Malassezia tropica*, the causal fungus of *tinea flava*.

Table III shows that occasional cases of *tinea* occur in the mountain people and produce in them a much more severe reaction than in those on the coast.



FIGURE I.

A group of Mekeo natives awaiting examination.

In the Mekeo, girls were observed who were covered with the loose scales of advanced *tinea*, but contrary to expectations, this does not affect their value in the marriage market.



FIGURE II.

A field laboratory in a Mekeo village.

Malaria.

The Mekeo, in the terms of Christophers's classification, as employed in British India, is a hyperendemic malarious area. That is to say the maximum amount of malaria occurs in children of two to five years. All children have enlarged spleens. In some villages the average enlargement is more than half the distance

from the costal margin to the umbilicus. In a previous paper the results of a field experiment in treatment were given. The parasite in every case examined was *Plasmodium falciparum*, and the vector was *Anopheles punctulatus* var. *mollucensis* (Swellengrebel and Swellengrebel de Graaf). Inquiries conducted into infantile mortality rates revealed

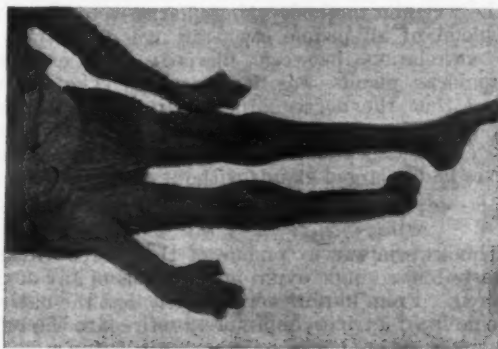


FIGURE III.

Mekeo woman with advanced leprosy, all limbs showing amputation stumps.

that the "salting process" kills very few babies. (Other aspects of malaria and the mosquitoes found will be discussed in a future publication.)

In the introduction, attention was drawn to the increasing population of the Mekeo, who appear to be relatively unaffected by the severe malaria, an aspect of the problem that should not be neglected



FIGURE IV.

A group of well nourished Mekeo brides.

when discussing problems of depopulation. It has been suggested that malaria may play an important part in the decrease of population occurring in eastern Papua. For this statement to be true, very different circumstances would have to operate there from those found in the Mekeo.

Filariasis.

Two cases of elephantiasis (one of the leg, the other of the scrotum) were seen at Inauauni, the most northerly village of the Mekeo. This village, nestling under the foothills, has a greater rainfall than villages near the coast. A filaria survey was conducted in this village, from 9 p.m. to midnight, when the blood of all the inhabitants was examined by the wet film method. Microfilariae were found in the blood of all people over the age of forty-five. The correlation between filariasis and enlarged epitrochlear glands was investigated. The results suggest that the degree of correlation is not high. Only half the natives with microfilariae in the blood had enlarged epitrochlear glands, whilst many natives had enlarged glands without evident filariasis.

Hookworm.

A hookworm survey of one of the Mekeo villages failed to find a single ovum in the stools of any of the children. From inquiries we learned that the natives have no fixed latrines, and merely retire into the bush surrounding the house. Almost all natives go to stool in the early morning, yet we failed to find any traces of such at 7 a.m.—the village pigs had effectively removed all the evidence. This explains why, in the coastal districts at least, the experienced white traveller does not eat village pig. In the mountains, pigs are better fed, and are not so coprophagous in their habits.

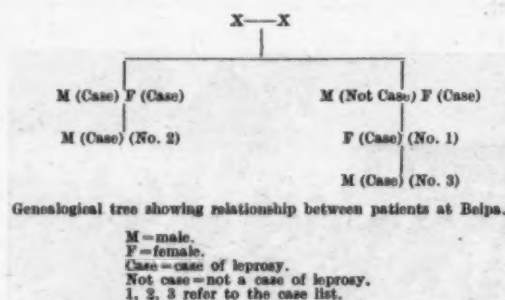
Throughout the coastal and subcoastal districts no cases of clinical ankylostomiasis were found even though mass treatment had been discontinued for at least five years. It seems scarcely possible that the pigs can remove all possibility of hookworm disease, but apparently they, together with a good diet, have succeeded in keeping the disease below a clinical entity.

*Diseases of Recent Introduction.**Leprosy.*

Seven cases of leprosy were seen in the Mekeo. From the attitude of the natives one felt that these included the whole of the obvious cases. It is possible that early non-evident cases may have been present amongst the 30% absentees, but this would have been by accident rather than by design. The presence of the disease, in its earliest stages, would not be recognized by the natives.

In Table VI are set out the cases of leprosy, together with the social conditions under which these people were living when found.

With the exception of the three patients at Beipa, none of the patients are related. In the accompanying genealogical tree the relationship between the patients at Beipa is depicted, tracing them back to a common source of infection.



From the survey at least five sources of infection are evident, perhaps arising from a common origin; but of this origin no clear evidence was found. The origin would be before the birth of the oldest inhabitant, and any data collected would thus be of little value. It has been established that the south coast of Papua was visited by Chinese junks during the early years of last century; they possibly introduced this disease.

All leprosy cases were of the chronic variety, none of the patients exhibiting skin lesions. This finding is of extreme importance in the spread of the disease, for, with one exception, it is doubtful whether the patients are now infectious. Public opinion has forced those with the worst infections to live apart from the general community and to withdraw from public life—a useful system of segregation instituted by the natives themselves.

Recent opinions favour the view that infection with the causal organism of leprosy is not in itself sufficient to produce the disease, but to this must be added some physiological catastrophe which debilitates the individual and lowers resistance. Such a crisis may be brought about by malnutrition or by prolonged disease. As long as the people of the Mekeo enjoy an abundance of good food and relative freedom from disease, so long may they be expected to avoid the ravages of an acute epidemic of leprosy.

Gonorrhœa.

Only a partial investigation was conducted, but the population appeared to be remarkably free from gonorrhœa. No cases of urethral discharge were

TABLE VI.
The Incidence of Leprosy.

Village.	Number.	Sex.	Age.	Social Conditions.
Beipa	1	F.	50	Living apart in a small garden (with her son) (vide 3).
	2	M.	50	Living apart in a small garden.
Aipeana	3	M.	16	Living with mother (vide 1).
Amo Amo	4	M.	45	Living with wife and three children in the village.
Bebeo	5	M.	50	Living with two children in the village.
	6	F.	50	Living alone, husband and child dead.
Oriropetana	7	M.	20	Living with father and stepmother, both of whom were normal. Mother died, but did not die from leprosy.

noted, and only one native (a woman aged eighteen years) presented eye signs attributable to *ophthalmia neonatorum*.

The author's experience amongst natives is that the amount of semi-blindness or complete blindness amongst children is a reliable index of the extent of active gonorrhoea in the community.

Granuloma inguinale is extremely rare amongst natives in this section of Papua, although I was given to understand that it is quite frequent further west.

General Medical and Surgical Diseases.

Goitre.

In the mountain districts above a height of 4,000 feet several villages were visited in which chronic parenchymatous goitre exists. The disease has a very localized distribution, being found in only four villages, and the distribution within an affected village is also limited.

The details of the cases seen are enumerated in Table VII.

Clinical Features.—In cases with a history of a year or two, the swelling was soft and general throughout the gland, whilst in those with a history of several years the gland had become hard, and localized tumours could be felt within its substance. This suggests that the earlier enlargement is a diffuse parenchymatous goitre,⁽⁴⁾ changing in a few years to either colloid or nodular goitre, or both.

In females the onset was associated with the first pregnancy. In men no circumstance could be connected with the onset. The offspring of the pregnancy associated with the thyroid enlargement failed to show evidence of cretinism, in fact no cretins were found in any village. No woman became pregnant after the enlargement of the thyroid—an unusual feature in a population where the birth rate is high.

Ætiology.—Much has been written by McCarrison,⁽⁵⁾ Marine,⁽⁶⁾ Hercus *et alii*⁽⁷⁾ concerning the ætiological significance of iodine deficiency, soil composition and water pollution. In three out of the four villages

affected (the fourth, Kailape, was not visited) the surrounding soil is a mica schist formation, a variety of sedimentary soil of low colloid content and generally considered poor in iodine. Unfortunately samples of this soil have not been analysed. In Papua our findings suggest that water supply alone, whether the water be deficient in iodine or heavily polluted, does not provide a complete explanation of the ætiology of the disease.

In the first column of the table the adults and children inspected in each village are shown. Goitre was found in adults only, so that the percentage incidence varied from 18% at Ikuwei to less than 1% at Maini. In each village many people have continually drawn water from the same source as the goitrous and as yet have not been affected. Although the initial enlargement was often associated with pregnancy, only a small percentage of the pregnant women drawing water developed goitre.

From time to time diet has been mentioned as a possible contributing factor in the ætiology. The diet of these natives is remarkably constant—sweet potato is the staple article, augmented by occasional feasts of pig. Curiously enough the natives believe goitre is produced in women who eat pig during the period of gestation.

McCarrison⁽⁵⁾ has shown that excessive diets of protein and fat with or without gross deficiency in vitamins can produce goitre. This appears to fit in with the beliefs of natives. A feast may last a month, during which many pigs would be eaten; thus the usual physiological strain imposed upon the thyroid by pregnancy together with the somewhat unaccustomed and excessive diet of fat and protein at that time may be exciting causes.

Professor Harvey Sutton⁽⁸⁾ has repeatedly drawn attention to the close association of high mountains with steep watersheds and the incidence of goitre in Australia. This is equally true of Papua; but the converse is not, for there are many healthy villages high up on the mountain sides occupying apparently similar positions to those affected. (This corresponds also to Australian experience.)

TABLE VII.
Goitre.

Village.	Altitude, in Feet.	Sex.	Age.	Length of History.	Clinical Description.
Ikuwei (28-20)	5,500	F.	45	Many years.	Hard fibrous enlargement with localized swellings. Tumour shrunken away from overlying skin.
		F.	25	2 years.	Generalized soft enlargement of the whole gland.
		F.	23	2 years.	Small generalized enlargement of the whole gland.
		F.	30	Indefinite.	Nodular enlargement of isthmus and right lobe.
		F.	35	Indefinite.	Moderate enlargement of whole gland with several harder nodules.
Maini (363-225)	6,300	F.	20	1 year.	Soft localized swelling of right lobe.
		F.	40	Indefinite.	Hard localized swelling of right lobe, two smaller nodules in the isthmus.
Kailape (?)	6,000	F.	25	3 years.	Soft enlargement of whole gland.
Tura (42-35)	4,500	M.	35	2 years.	Soft swelling of left lobe, smaller swelling of isthmus.
		M.	40	Indefinite.	Immense enlargement, many hard localized tumours throughout the gland.
		M.	40	Indefinite.	Immense enlargement of gland, localized tumours of right lobe.
		F.	30	Indefinite.	Soft swelling of left lobe.

The Recorded Distribution of Goitre in Papua and New Guinea.—In map I the three known goitrous areas are shown. Dr. E. T. Brennan⁽⁹⁾ has reported goitre in a village close to Mount Toma, about thirty miles from Rabaul. Here the disease is localized to one village, the surrounding villages remaining healthy. From a collection of villages in the Hydrographers' Range on the north-east coast of Papua many cases of goitre have been reported.⁽¹⁰⁾ The last group of villages include those described in this article, together with a still larger collection on the adjoining Ononge plateau some forty miles to the east of the district covered by this expedition.

both Maini and Sopo accompanied by a number of deaths.

Whereas the epidemic ceased at Maini on the west, it continued on over the Kosipe swamps down through Waitape to Ononge on the eastern leg. Natives informed me that a regular trade route runs right down to Ononge on the east, but that it ends at Maini on the west, explaining the absence of the disease in the Ivane Valley. The trade is very novel in nature, and is confined almost exclusively to white cowrie shells used as ornaments. Records from the Mandated Territory⁽¹¹⁾ show that an epidemic of infantile paralysis occurred around the



MAP I.

Showing the known distribution of goitre in Papua and New Guinea.

Infantile Paralysis.

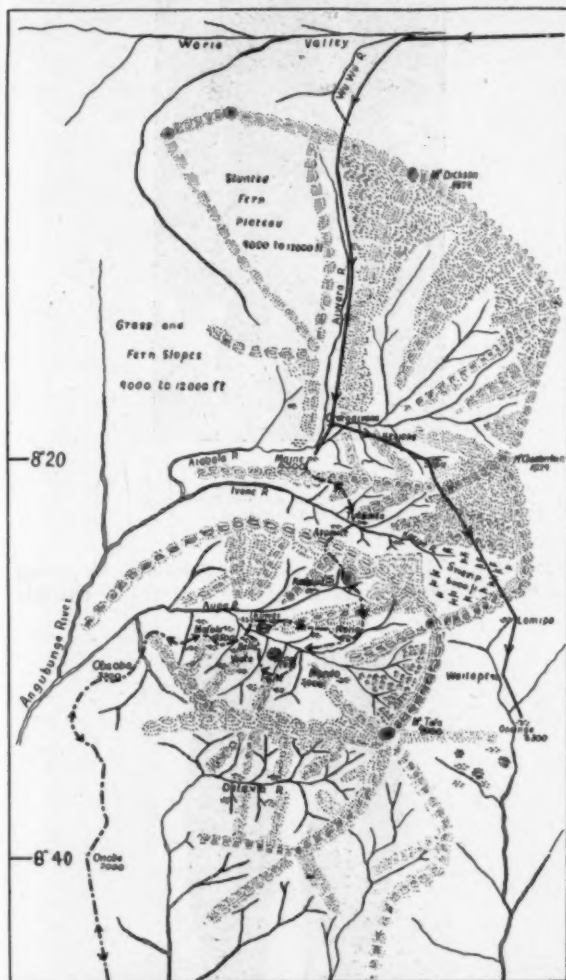
Several cases of paralysis were seen amongst the coastal natives, and two cases were found in the depths of the Goilala. This very interesting finding led to an inquiry into the source of the infection. About 1929 a "sickness" appeared in a village in the upper Aiwara. Some of the natives had been on a trading expedition over the range into the upper waters of the Waria. This disease spread down the Aiwara to the village of Ororogaivana. Two trading expeditions left this village, one to go to Maini and the other to go along the eastern bank of the Lowa to Sopo. Cases of infantile paralysis appeared at

mouth of the Waria during 1929. A remarkable feature was its spread along several hundred miles of waterways by means of natives either in the incubation stage of the disease, or carriers, or victims of the suggested non-paralytic form of the disease. The path of the epidemic is shown in map II.

Dermatitis ab Igne.

In the inner mountain regions undoubtedly the most common "disease" (the name disease is justifiable) was *dermatitis ab igne*. At about 4 p.m. the mountain mists begin to settle and the cold becomes intense. Despite the altitude the natives

do not wear clothes, even during the long cold evenings of the wet season, but obtain a semblance of comfort by crouching over their fires in a semi-squatting, semi-stooped attitude. This accounts for the almost universal appearance of the dermatitis along the anterior surface of both legs. All stages are observed, from a mild hyperæmia to extensive cicatrization and small chronic trophic ulcers.



MAP II.

The headwaters of the Angabunga River. The broken line represents the route followed by the expedition, while the continuous line shows the line of spread of the poliomyelitis epidemic. The collections of dots indicate villages wherein cases of goitre were seen.

Other Diseases.

Table VIII shows more accurately than native hospital records the presence amongst these natives of many diseases common to the white race. Natives suffering from most of these diseases would not as a rule find their way into a hospital. Most of the conditions do not necessarily shorten life, but some are the sequels of more serious diseases which could, and no doubt do, leave a trail of deaths behind them. A few of the diseases listed may be discussed.

TABLE VIII.
Miscellaneous Diseases (not Previously Mentioned).

Diseases.	Roro.	Mekeo.	Mountains.	Total.
Hydrocephalus	—	—	1	1
Chronic heart disease .. .	—	1	—	1
Hemiparesis (congenital) ..	—	1	—	1
Dumb	—	2	—	2
Epilepsy	1	1	—	2
Insane (? amentia)	1	3	—	4
Mongol	—	1	—	1
Paralysis agitans	1	—	—	1
Optic atrophy	1	—	—	1
Myasthenia gravis	1	—	—	1
Acute conjunctivitis	1	2	—	3
Corneal opacity (? gonorrhoeal)	—	1	—	1
Hypospadias	1	—	—	1
Pterygium	1	1	—	2
Molluscum contagiosum .. .	2	14	—	16
Breast abscess	—	—	1	1
Chronic arthritis	1	1	1	3
Ichthyosis	—	1	—	1
Gangrene of the back	—	1	—	1
Chronic otitis media	2	2	—	4
Lipoma	—	1	—	1
Dislocated hip	—	—	1	1
Chest lesions	16	24	2	42
Totals	29	57	6	92
Percentage incidence in population	3.4	2.2	0.3	1.8

Paralysis Agitans.—A male, about forty years of age, was found suffering from Parkinson's syndrome. Information gathered suggested that this followed an epidemic of encephalitis which swept the village about ten years ago.

Rheumatic Carditis.—A youth of eighteen presented a history of increasing breathlessness and œdema of the legs of about three years' duration. The physical signs suggested mitral disease—stenosis with cardiac failure. The presence of such a disease in a native village is rather unusual. Numerous writers have drawn attention to the almost complete absence of rheumatic disease in tropical countries. The origin of this man's infection appears a mystery.



FIGURE V.

A group of mountain natives chanting a song of welcome.

Myasthenia Gravis.—A woman in the Mekeo village gave the unusual history that for many years she had been unable to stand up for any length of time, and that when walking she could not progress more than a few feet at a time before her legs lost all power and she slowly sank to the ground. After lying there for a few minutes she was able again to assume the

erect posture for a short time, after which the process would be repeated.

Chest Lesions.—Most of the chest lesions were in natives over thirty years of age. The emaciated

was found positive. In some, the physical signs alone (apical râles *et cetera*) suggested active pulmonary tuberculosis; however, the age of those affected, and



FIGURE VI.
Mountain woman wearing an abortion belt.

appearance of some of the patients seen in the first village visited suggested the diagnosis of pulmonary



FIGURE VII.
Male native with goitre.

tuberculosis. On this account the sputa of all natives with a history of persistent long-standing cough were examined for tubercle bacilli, but not one

particularly the absence of similar lesions in young adults, suggested that these were cases of chronic



FIGURE VIII.
A female with a goitre carrying her normal child, aged four years.



FIGURE IX.
Advanced "dermatitis ab igne".

bronchitis. The presence of extensive paranasal sinusitis (almost all natives have nasal or post-nasal discharges) would support this diagnosis.

Deaths and Death Rates.

By the courtesy of Mr. Thompson, Resident Magistrate, Kairuku, we were permitted to abstract from the census rolls population figures for each village. Mr. Thompson had also made available from the records the total deaths and births for the five years July 1, 1930, to June 30, 1935.

All these figures are given in Tables IX and X.

From these tables it will be seen that in all villages of the Roro and in most villages of the Mekeo, the birth rate exceeds the death rate by varying amounts. In four Mekeo villages there is an actual decline in the population. In one of those villages the decline is due to a very high death rate, whilst in the other

three lower birth rates appear to be assisting a slightly higher death rate. The average annual increase for the Mekeo is 2.16 per mille, whilst for the Roro it is 8.9 per mille.

For comparison purposes vital statistics for the native populations of nine British colonies are shown in Table XI.

The annual increase in Papua is below the average for these countries. In interpreting these figures it must be remembered that the Papuan birth rate does not represent the actual number of births, but rather the yearly survival rate collected by the magistrate during the yearly tax gathering. These survival figures tend to be accurate, for a taxpayer is given

TABLE IX.
Death Rates and Birth Rates for the Mekeo Villages for the Five Years 1930 to 1935.

Village.	Population Census, July 1, 1935.	Total Deaths, July 1, 1930, to June 30, 1935.	Average Annual Death Rate per 1,000.	Total Births, July 1, 1930, to June 30, 1935.	Average Annual Birth Rate per 1,000.	Annual Increase Births over Deaths.	Annual Decrease Births over Deaths.
Rarai	335	52	31.04	55	32.8	1.7	—
Inaunui	215	54	50.2	38	35.3	—	14.9
Bebeo	121	21	34.7	18	29.7	—	5.0
Oriropetana	190	36	37.8	21	22.1	—	15.7
Iesubabua	224	25	22.3	33	29.4	7.1	—
Inaual	335	59	35.2	64	38.2	3.0	—
Eboa	327	54	33.02	42	25.6	—	7.4
Inaualui	358	32	29.05	61	34.07	5.0	—
Inawi	478	72	30.1	95	30.7	9.6	—
Aipeana	450	60	26.6	84	37.3	10.7	—
Beipa	623	99	31.7	101	32.42	0.7	—
Amo Amo	136	31	22.7	17	25.0	2.3	—
Inawai	74	6	16.2	13	35.1	18.9	—
Total	3,506	601	31.0	642	33.16	41 = 0.21%	—

TABLE X.
Death Rates and Birth Rates for the Roro Villages for the Five Years 1930 to 1935.

Village.	Population Census, July 1, 1935.	Total Deaths, July 1, 1930, to June 30, 1935.	Average Annual Death Rate per 1,000.	Total Births, July 1, 1930, to June 30, 1935.	Average Annual Birth Rate per 1,000.	Annual Increase Births over Deaths.	Annual Decrease Births over Deaths.
Bioto	224	30	25.6	45	32.4	6.8	—
Delena	370	32	17.2	60	32.4	15.2	—
Chirria	335	48	28.6	64	36.05	7.4	—
Mou	250	32	21.6	34	27.2	5.6	—
Rapa	267	22	21.0	32	23.9	2.9	—
Pinupaka	185	20	21.6	30	32.4	10.8	—
Babiko	151	12	15.8	17	22.5	6.7	—
Total	1,792	202	24.55	282	31.25	80 = 0.80%	—

TABLE XI.
The Vital Statistics of Nine British Colonies and Protectorates.

Colony or Country.	Year.	Population.	Crude Death Rates per 1,000.	Crude Birth Rates per 1,000.	Population Increase per 1,000.
Nyasaland	1934	35,500	27.7	42.2	14.5
Nigeria	1933	155,064	15.85	24.93	11.08
Gambia	1931	14,135	26.01	29.74	3.73
British Guiana	1934	321,260	24.42	32.56	8.14
Brunei	1934	32,971	37.5	30.6	2.1
Johore	1934	499,370	25.73	41.77	16.04
Kedah and Perlis	1934	465,270	21.8	36.03	14.23
Fiji	1933	96,656	17.72	35.10	17.38
Gilbert and Ellice	1933	33,445	21.22	32.5	11.28

a bonus for each child, and a man with four or more children does not pay the head tax.

The Papuan death rates are actually higher than the list given in Table XI. It is very difficult to determine accurately the cause of death, as a complete register is not kept. We endeavoured to collect relevant facts, but with only partial success. According to custom the widow or widower paints the body with black paint as a sign of bereavement. This paint is not removed, but allowed gradually to wear off. During the survey information was collected from all natives in mourning, but in many instances no useful information could be obtained. The most accurate material was collected from those natives who mourned a woman who died in child-birth or the victim of a snake bite.



FIGURE X.

The characteristic attitude of natives crouching over a fire. This habit results in the extensive burns seen in the mountain natives. (See Figure IX.)

The figures collected, though small, showed that almost 50% of the women mourned at the time of the survey died from complications of pregnancy. This very high figure is due to the primitive methods practised by native midwives, who are useless even in the simplest complication such as retained placenta.

Snake bite is a common occurrence, and yearly many natives die from this accident. The average native path is an almost indiscernible track amidst tall grass or through dense scrub, and the travelling native takes no precautions, although almost all natives are exceedingly afraid of snakes. The mission sisters informed me that fear rather than the snake venom was responsible for a percentage of the deaths.

The cause of the remaining deaths is obscure, though accidents and chest complaints—tuberculosis and pneumonia—seem to account for a number.

The crude death rates in the Mekeo villages rise considerably higher than in the Roro. Malaria is

probably responsible for this increase. The crude death rate for the Roro village of Pinupaka may be taken as an indication of the forces of death acting without the influence of malaria. Very little malaria occurs in this village. On this basis it could be argued that malaria or its complications is responsible in the Mekeo for approximately ten deaths per thousand *per annum* of the population.

Native Customs of Medical Interest.

In the Mekeo the natives practise a custom of definite public health importance. After the marriage ceremony the bride returns to her husband's household and is thenceforth excused from all manual labour, even those tasks such as water-carrying, gardening, or the collection of firewood—the accepted lot of the native woman. In addition, the bride is treated as a semi-invalid and fed upon the most nourishing foods, with the result that she becomes extremely fat. These arrangements continue until after the birth of her first baby, unless, of course, this period is unduly prolonged. The natives informed me that this custom had its origin in an endeavour to prevent miscarriages, of which apparently there were quite a few in the old days.

These natives know nothing of contraception, but do practise mechanical abortion. Two methods are in use. In the coast the result is achieved by vigorous massage of the abdomen, either using a flat stone or by rolling the women over a log; in the mountains the women place considerable faith in a tightly fastened belt of plaited cane around the abdomen. The practice of abortion is not common, for children are an asset, as the Government pays an allowance of five shillings per child, and the man with four children is exempted from the native head tax.

SUMMARY.

Coastal and Subcoastal Districts.—The population of the coastal and subcoastal districts is increasing. The children and infants number 43% of the total population, a figure also obtained by Dr. Strong.⁽¹³⁾ This is due to (a) a moderately high birth rate (survival rate), (b) a moderately low death rate. The natives are not subjected to the severe onslaught of any particular disease; the general conditions prevailing are those of a normal native population where the average morbidity is due to mild endemic diseases. Malaria undoubtedly influences the death rate, whilst those diseases that might influence the birth rate are absent.

Mountain Districts.—Population figures are not available for these districts. The natives are exceedingly healthy, the common diseases of the coastal belt being absent or only commencing to make their appearance. Maternal mortality and snake bite still claim a high percentage of deaths, whilst pneumonia is also a serious disease at these high altitudes. Although goitre is an interesting disease, it does not influence the death rate.

The inner mountain districts (Goilala) are remarkably free from disease, due partly to altitude and partly to isolation. Will the contact associated with the "opening up" of this territory bring in its train a long list of foreign ailments?

ACKNOWLEDGEMENTS.

I desire to express my appreciation of the interest and aid accorded to the expedition by Sir Hubert Murray, Lieutenant-Governor of Papua, Dr. W. M. Strong, Principal Medical Officer, and members of the magisterial staff. Also to Professor Harvey Sutton, for his interest and criticism, and to Mr. K. J. Clinton, biochemist, of the School of Public Health and Tropical Medicine, for valuable technical assistance.

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A NOTE ON THE TREATMENT OF PLUMBISM.

By F. F. PINCUS, M.B., B.S.,

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THE last six years have brought the writer into contact with a large number of cases of plumbism requiring treatment. These have been mainly, but not wholly, in adults, and of industrial origin; symptoms have ranged in severity from acute colic, pareses *et cetera* to mild indefinite malaise. The milder cases have largely predominated.

The writer's difficulty in finding in literature available to him any very full or authoritative discussion on treatment has prompted him to give this brief account of his experience, with the idea of assisting general practitioners who, like himself, become confronted with a condition fairly unusual in ordinary medical practice, the treatment of which is dealt with inadequately by general medical text-books.

In the first instance, besides symptomatic and prophylactic treatment, calcium by various routes with a basic ash diet was resorted to in acute cases, and potassium iodide was given orally with a ketogenic diet in chronic cases. Later, sodium thiosulphate was cautiously used intravenously in the chronic type. The distinction between acute and chronic cases followed text-book lines. The rather vaguely apprehended rationale of this course was the idea that calcium *et cetera* tended to convert circulating lead compounds into insoluble salts, which were stored harmlessly, probably in the

skeleton, while potassium iodide *et cetera* aided the formation of soluble and easily eliminated forms. Results, while tending to confirm ideas of chemical mechanism, did not appear satisfactory. While calcium therapy, especially calcium given intravenously, promptly ameliorated acute symptoms, the symptoms tended to reappear on cessation of treatment, as though the presumably stored lead were not permanent immobilized. The potassium iodide, on the other hand, sometimes converted mild into alarmingly acute cases.

Gradually the superiority of sodium thiosulphate treatment (the main theme of this communication) was realized, and as confidence in its effective use was gained, distinction between acute and chronic plumbism was disregarded. The present opinion was formed that in all forms of lead poisoning, as distinct from sequelæ of lead poisoning, adequate thiosulphate medication gave results uniformly more satisfactory than those obtained with any other of the drugs or lines of treatment tried.

Thiosulphate is now regarded as a specific by the writer and is the only treatment used, together with general hygiene and symptomatic treatment.

The standard technique employed is the intravenous injection of from 0.6 to 2.4 grammes (10 to 40 grains) of a solution of sodium thiosulphate in distilled water every second day until all symptoms of active poisoning have disappeared. The dose for the average adult is 2.0 grammes (30 grains). The commercial salt is dissolved in distilled water, 0.6 gramme (10 grains) to each 4.0 cubic centimetres (one drachm) of water, filtered, boiled momentarily twice at an interval of six hours, and injected on cooling immediately after the second boiling. No toxic symptoms have been observed after many hundreds of injections of the above doses, although some attempts to increase doses and frequency have led to alarming results.

Improvement has appeared to be invariable in the case of undoubted plumbism, so invariable that the writer places much reliance on the treatment as confirmatory (at least in a negative sense) of the diagnosis. Patients whose condition fails to improve are probably not suffering from plumbism; this is of course not to be taken to apply to sequelæ.

In gauging the effectiveness of treatment, or indeed the severity of the condition, symptoms rather than laboratory tests appear much the more reliable criteria; counts of stippled cells, the discovery of lead in urine examinations *et cetera* appear at present rather as aids in diagnosis than as means of measuring the degree of intoxication.

Symptomatic treatment has followed established lines. Atropine in heroic doses effectively relieves colic. The very stubborn constipation so common in plumbism is overcome by thiosulphate given orally in a mixture, up to 2.0 grammes (30 grains) three times a day. The oral use of the salt does not appear to necessitate reduction of the intravenous dosage or to increase the effectiveness of the latter. Chloral with bromide is used for insomnia,

syrup duplex for anorexia and debility. Variations in diet, except in the direction of completeness, have not appeared to be useful.

It is recognized that when silver salts in solution are acted upon by an excess of sodium thiosulphate, complex salts are formed in which the silver is in a negative ion and does not give the standard reactions for its salts. There is reason to suppose that a similar process is the basis of the thiosulphate treatment of mercurial, bismuth and arsenical poisoning. *In vitro* a rather cursory experiment demonstrates that a similar inactivation takes place with lead salts.

If the suggested reaction takes place with lead circulating in the blood, it is obviously preferable to inactivate this *in situ* than either to store it to cause possible future trouble or to eliminate it rapidly with inevitable exacerbation of symptoms. The writer does not know at present whether the rate of elimination of lead is either increased or decreased by the use of thiosulphate; but it appears clinically that while improvement under calcium therapy tends to be temporary, thiosulphate gives steady permanent improvement, pointing to a probability that elimination, if not increased, is not greatly retarded. There is no obvious reason why potassium iodide and other eliminative treatment should not be combined with the protective thiosulphate therapy; this has been tried in a few cases with apparent success.

Two opposing systems of drug prophylaxis have been recommended in the past for those exposed to plumbism hazard: one is the use of organic acids and other substances to convert ingested lead into easily soluble and easily eliminated salts; the other is the use of calcium *et cetera* with the idea of "fixing" circulating lead. Both appear to the writer to be dangerous, the latter particularly so in its liability to the masking of warning acute symptoms and the unhindered development of tragic and incurable sequelæ. With the modern widespread dexterity in intravenous methods, and the public's diminishing prejudice against "having needles", it appears possible that a system of prophylaxis involving the regular administration of this cheap and easily prepared medicament might be usefully tried where the hazard is unavoidably large.

Of course the first line of defence should be removal of the hazard by dust control, hygiene and so on, but there are conditions, such as in ship-breaking, in which this is difficult.

It should be clearly understood that the foregoing discussion refers only to conditions in which lead salts are actively and harmfully circulating in the blood; the treatment of sequelæ is a totally distinct problem.

Acknowledgement.

The writer is indebted to Dr. D. O. Shiels for chemical suggestions.

CONE SHELL MOLLUSC POISONING, WITH REPORT OF A FATAL CASE.

By H. FLECKER, M.B., Ch.M., F.R.C.S.,
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REPORTS of instances of fatal poisoning by the various species of cone shell, *Conus*, are so rare that it seems that no such case occurring in Australian waters has until this year been recorded. Professor J. B. Cleland has collected the literature and described in considerable detail in *The Australasian Medical Gazette* of September 14 and 21, 1912, the cases of poisoning by different species of *Conus* recorded up to that time. These may be summarized as follows:

I. A. Adams (*"Zoology of the Voyage of Her Majesty's ship Samarang"*, 1850, page 19). Sir Edward Belcher was bitten as he picked up the *Conus aulicus* from the water at Mayo, one of the Moluccas. The wound received was accompanied by acute pain, and consisted of a small, deep, triangular mark succeeded by a watery vesicle. The pain was compared with the burning of phosphorus beneath the skin. According to J. E. Gray (*Annals of Natural History*, Volume XII, April, 1853, page 178), in this instance the cone hung on like a leech.

II. Crosse and Marie (*Journal de Conchologie*, Volume XXII, 1874, page 353). A Ponebo native, New Caledonia, was stung on the hand by *Conus testile*. The hand and arm were considerably swollen and severe pain persisted for some time.

III. A. Garrett (*Journal of Conchology*, 1878, page 365). When collecting at Panmotus, the writer was bitten by one of three specimens of *Conus tulipa* which he held in his hand while searching for others, when the long, slender proboscis punctured a finger, causing sharp pain not unlike the sting of a wasp.

IV. B. Hinde (*Proceedings of the Linnean Society of New South Wales*, Volume LX, 1885, page 944). The author saw a native on the island of Matupi, New Britain, who had been bitten by a *Conus geographus* and who had at once cut small incisions with a sharp stone all over his arm and shoulder. The blood flowed freely and the native explained that, had he not done so, he would have died.

V. Dr. A. H. Hallen reports that a native in Fiji, who had cracked the shell of a *Conus geographus*, handed it to his European mistress. To extract the soft parts from the shell, she inserted the little finger, when she felt the animal shoot out a sharp-pointed thing which made her call out at once that she was bitten and poisoned. The point of the puncture was minute and only to be seen with great care. Locally it caused a bluish discoloration near the side of the nail. The effects were most grave. First a local numbness spread rapidly up the arm, which became paralysed. The paralysis spread rapidly throughout the body. Not only was general muscular control abolished so that even the head had to be supported to permit breathing, but there

was loss also in a lesser degree, it is thought, of sensation, with numbness and "pins and needles" beginning in the arm and becoming generalized, with disappearance of muscular sense and complete absence of knee jerks. Utterance was thick and

The above five cases were all non-fatal. There does not appear to be any first hand description in any medical publication, even when the patients were seen by medical officers, the instances quoted being mostly from non-medical journals. Numerous



FIGURE I.
View of *Conus geographus* responsible for fatality.

indistinct. The cardiac and respiratory apparatus did not participate to a dangerous degree in the paralysis. When at its worst, three or four hours after the patient was bitten, the condition distinctly affected the throat and distress was caused by the difficulty in removing accumulated fluid. Micturition



FIGURE II.
View of *Conus geographus* responsible for fatality.

was involuntary. The worst was past in about six hours, but the paralysis persisted with diminishing intensity until next day. Numbness lasted considerably longer in the injured finger, and for a month afterwards she experienced a shock in the little finger on hard impaction, as when playing the piano.

hearsay and otherwise non-recorded instances, generally in natives, are mentioned without any great detail. The only fatal case of which definite information is available is the following, reported by Professor Cleland in the Sixth Report of the Microbiological Laboratory (New South Wales Government Bureau of Microbiology) for the year 1915. Professor Cleland quotes the following extract from "Life in the Southern Isles", by the Reverend W. Wyatt Gill. On the island of Mare (southernmost of the Loyalty Group, immediately to the east of New Caledonia), in the doubtful light, a native "unhappily took a good-sized shell-fish (*Conus textile*) and put it in his basket. He immediately felt a painful sensation running up his right arm to the shoulder. He went home. The pain increased until he writhed in agony. The body swelled to an enormous size, and by daylight he was a corpse."

Of the above cases there were two caused by *Conus aulicus* and *Conus tulipa* respectively, and these appear to be relatively mild; two instances of poisoning by *Conus textile*, one mild and the other fatal; and two of *Conus geographus*, one perhaps mitigated by treatment by incision and the other severe.

Early this year it was decided, at a conference held at Cairns, to form a Registry of Injuries Caused by Plants and Animals in Tropical Queensland, and accordingly questionnaires were forwarded to all the medical practitioners practising in North Queensland. The first case reported was by Dr. T. B. Clouston, then at Proserpine, to whom I am indebted for details of the fatal case here recorded.

C.H.G., a male, aged twenty-seven years, whilst on a pleasure cruise landed at Haymen Island on June 27, 1935, and picked up a live cone shell (since identified by Mr. H. A. Longman, of the Queensland Museum, as *Conus geographus*). According to an eye-witness, it was gripped in the palm of one hand, with the open side downwards in contact with the skin, whilst with the other he proceeded to scrape with a knife, the epidermis, that is, a thin cuticle covering the hard part of the shell. It was during this operation that he was stung in the palm of the hand. "Just a small puncture mark" was visible. Dr. Clouston did not see the patient until just before death, but the following details were obtained by him from the patient's mother, who was present with him. Local symptoms of alight numbness started almost at once. There was no pain at any time. Ten minutes afterwards there was a feeling of stiffness about the lips. At twenty minutes the sight became blurred, with diplopia; at thirty minutes the legs were paralysed; and at sixty minutes unconsciousness appeared and deepened into coma.

No effect was noted upon the skin, lymphatic, alimentary or genito-urinary systems. Just before death, the pulse became weak and rapid, with slow, shallow respirations. Death took place five hours after the patient was stung.

A post mortem examination showed that all the organs, heart, lungs, *et cetera*, were quite healthy. Mr. J. B. Henderson, Government Analyst, reports that no poison was found in the stomach contents. The victim was prior to the injury in perfect physical condition and in training for football.

The symptoms resemble much those of curare poisoning as described in earlier reports. As usual, the puncture was in the hand and insignificant in size. The most striking difference was the entire absence of pain, although there was a feeling of stiffness. This is in contrast to Case I, in which the pain (*Conus aulicus*) was compared with the burning of phosphorus beneath the skin; Case II (*Conus textile*), in which severe pain persisted for some time; Case III (*Conus tulipa*), in which there was sharp pain, not unlike the sting of a wasp; and Case V (also *Conus geographus*), in which the patient felt a sharp-pointed thing, which made her call out at once that she was bitten and poisoned. The victim of the fatal stinging by *Conus textile* immediately felt a painful sensation running up to the shoulder, which increased until he writhed in agony.

The genus *Conus*, a gastropod mollusc, is quite a common one, there being nearly 500 species, but reports of only five of their inflicting injury can be found in the literature. Although one at least, the dead shell of *Conus anemone*, seldom seen alive, is frequently washed up on the beaches of south-eastern Australia, most other species are tropical. In the region of the Great Barrier Reef many species are common. Of those already mentioned, *Conus textile* is met with from time to time, but is by no means either the largest or the most frequently met with; while the *Conus geographus* is relatively rare and, according to C. Hedley ("The Australian Encyclopædia", Volume II, page 135), lurks under stones on coral reefs and is so rare that few Europeans see it alive. It has a much thinner shell than most other species and can be easily recognized by its gay-tinted cylindrical shell about three inches long. *Conus marmoreus*, according to Montrouzier (*Journal de Conchologie*,

Volume XXV, 1877, page 99), has likewise been known to inflict injury.

Cooke, in the "Cambridge Natural History" volume on molluscs (edited 1895), page 218, writes of the Conidae, to which family the *Conus* belongs:

Toxoglossa.—Only three families, Tenebridae, Conidae and Cancellariidae, belong to this section. There is no central tooth, and no laterals, the radula consisting simply of large marginals on each side. In *Conus* these are of great size, with a blunt base which contains a poison-gland, the contents of which are carried to the point by a duct. The point is always singly and sometimes doubly barbed.

As some modern authorities prefer to divide the species of *Conus* (in the wide sense) into a number of genera or sub-genera, it should be mentioned that this shell is also listed as *Nubecula geographus*. According to Mr. H. A. Longman, a Japanese, F. Sugitana, in 1930 cites a case of poisoning by this species, but the publication (*Venus*, Tokio, Volume II, Number 3, 1930, page 151) is not available here.

Most conchologists are well aware of the poisonous effects of the living cone shells, although hitherto very few medical men knew of this. However, numerous instances are quoted of the dread and respect which the natives of tropical seas show to this shell; for example, the late Charles Hedley relates that while collecting on a coral reef he once rolled over a boulder and exposed a living *Conus textile*. Before he could pick it up, one of the natives hastily snatched it away, and explained, with vivid gesticulations, its hurtful qualities. On no account would he permit Mr. Hedley to touch it, but insisted on himself placing it in the bottle of spirits.

THE USE OF GENTIAN VIOLET (AQUEOUS SOLUTION) IN SKIN DISEASES.

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WHILE working in the skin department of the Royal Infirmary, Edinburgh, in 1934, I was first struck with the therapeutic value of a weak aqueous solution of gentian violet for treatment of secondarily infected dermatoses. Dr. G. H. Percival, one of the dermatologists of the infirmary, was using it with great success for treatment of these conditions. It was also being used concurrently at the Saint-Louis Hospital for Diseases of the Skin, Paris.

Percival found it of great value in bad cases of seborrhæic dermatitis of the scalp, in impetigo, and impetiginized eczema. I have found it of use also in paronychia and eczematoid ringworm, in which, apart from monilial or mycotic infection, there is usually a superimposed organismal infection.

The aniline dyes have been used extensively in the past in spirituous solutions for these latter conditions, but my experience has been that the

spirituous solutions are definitely more irritating than the weak aqueous ones.

Gentian violet, which is a mixture of crystal and methyl violet, has seemed to me to enjoy more success clinically than the other dyes, even when they too are made up in aqueous solutions. This may not be in accord with the findings of other workers in dermatology.

A 2% aqueous solution of gentian violet was the strength used in the Royal Infirmary, Edinburgh, and in Sydney I have continued the use of the same strength in all cases considered suitable for the treatment, except in paronychia, in which I use a slightly stronger solution, that is, 3%. It is of low toxicity and except in a few cases of idiosyncrasy to the dye (which may occur with the use of any chemical, however dilute), it can be used on any skin.

Another factor, clinically important, is that it may be employed around the mouth area, and even in the mouth itself, so that it is safe to use on a baby's face. Even when large areas of the skin are painted with this solution there are no apparent ill-results from absorption.

As it is a watery solution, and therefore very drying, it is advisable to suspend treatment over a large area every two or three days and to substitute an inunction of olive oil or vaseline to stop the tendency of the skin to crack or fissure. The vivid colour of the solution stains linen, but washes out of the cloth after it has paid several visits to the laundry.

I have found a 2% aqueous solution of gentian violet of use in the following conditions:

Impetigo and Impetiginized Eczema.—Here, in conjunction with starch poultices, it is of great value, particularly in young children, who so easily rub off ointments, unless they are swathed in bandages. In the eczema or dermatitis which has become secondarily infected with pyogenic organisms, this watery solution of gentian violet does not irritate, but seems to exercise a sedative action, while clearing up the overlying infection.

Intertrigo.—In intertrigo there is usually a secondary infection of monilia or streptococci which reacts well to the dye if it is painted on once or twice daily and if the opposing surfaces are separated by cotton wool.

Eczematoid Ringworm of the Feet and Hands.—In eczematoid ringworm of the feet and hands, in which there is usually an overlying or superimposed organismal infection, I have found the same solution of use. Applied twice daily and a plain zinc oxide paste being used at night, with the use of sandals for home wear in many cases, it quickly allays the irritation and gives great comfort, soon permitting further intensive treatment if necessary.

In connexion with footwear in this condition, Hollander, of Pittsburgh, points out:

Amongst the various factors which play a part in the recurrence of infections of the foot due to fungi and streptococci, hyperidrosis is undoubtedly an important one. The ordinary shoe, which encases the foot, tends to exaggerate the maceration of the epidermis associated

with perspiration. The so-called aerated shoes (with the top perforated with many small holes) tend to overcome hyperidrosis and to keep the feet much drier.

Thus in the warmer weather shoes of this type could be used with advantage. Correction of any degree of flat-foot is desirable also, as this condition may increase sweating.

Paronychia.—In paronychia a slightly stronger solution can be used (3% or 4%). Paint with a bevelled wooden applicator covered with a wisp of cotton wool, well down under the affected nail fold twice daily. Once a week use pure liquid carbolic acid in the same manner and suspend the gentian violet for that day. Again this treatment is of use whether the condition is of monilial or organismal origin.

Seborrhæic Dermatitis.—In bad cases of seborrhæic dermatitis of the scalp which are resistant to the usual sulphur and salicylic or resorcin ointments, if the hair is clipped closely once a week and the dye is painted on twice a day for a week or two, followed by a tar ointment when the condition is quiescent, there is a great improvement. In fact, I have found this the only method which will improve a bad case rapidly and convert it to one in which the ordinary therapeutic measures may be resumed. In "seborrhæic eczema", when it affects the scalp, causing the latter to become swollen and red and to weep profusely, with formation of crusts and matting of the hair, it will probably be necessary to continue the paint for a much longer time, as this condition is more intractable. Its colour is here a great disadvantage; but many patients, tired of ineffective ordinary treatment, are usually quite willing to entail this disadvantage for the sake of ultimate improvement.

Finally, it is worthy of mention that in the deep-seated pustular conditions, such as furunculosis, Bockhart's impetigo, sycosis *et cetera*, the dye is not of much avail, as its action is too superficial; here a strong aqueous solution of ichthyol, 40% to 75%, will be found of greater help.

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THE RELATIONSHIP BETWEEN DENTAL INFECTION AND THE NASAL SINUSES.¹

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DENTAL INFECTION IN CHILDHOOD.

WHAT is the influence of the teeth on the sinuses in childhood? There are two definite periods when

¹ Read at a meeting of the Western Australian Branch of the British Medical Association and the Dental Association of Western Australia on August 21, 1935.

the developing teeth exert a marked influence on the function of the nose and its accessory sinuses. The first is the period of primary or "external" dentition, and the second is the period of secondary or "internal" dentition. We are familiar with the symptoms and signs of the primary or external dentition period in the baby, namely, local neuralgia, the gums being acutely tender, swollen and congested, often with cystic hæmorrhagic blebs and general symptoms.

The nose may be influenced directly from the congested gums, or secondarily from engorgement of the tonsils and adenoids, with consequent nasal obstruction. Complications, such as *otitis media*, *bronchitis et cetera*, may ensue. The volume of the sinuses at this period has developed little, and this to a large extent protects them.

As these manifestations are fundamentally physiological, a conservative attitude to tonsil and adenoid enlargement and to otalgias, catarrhal *otitis media* and even suppurative *otitis media* must be adopted. The results of conservative treatment will generally be satisfactory, the condition subsiding on the eruption of the teeth.

An acute osteomyelitis of the superior maxilla occasionally occurs at this stage, owing to a buccal infection causing suppuration in a dental sac. The necrotic process extends to the wall of the maxillary sinus and finally discharges into the nose as well as into the mouth.

The period of secondary or internal dentition is one which has a more direct influence on the sinuses.

In all ear, nose and throat clinics for children patients are seen about the age of six and a half to seven and a half years whose symptoms are recurrent cold, stuffy and running noses *et cetera*. An X ray examination will reveal thickening of the lining mucosa of the sinuses and perhaps "full" sinuses. The majority of these patients are suffering from the complications of secondary or internal teething. The clinical picture within the antrum is similar to that of the gums during primary or external dentition. There is a large hillock bulging the floor of the antrum and surmounted with engorged and congested mucosa.

Varying congestive conditions of the turbinates and lining mucosa of the nasal cavities and sinuses result. If these are at all prolonged, infections are likely to be superadded. Any allergic manifestation will be accentuated. Here again the condition, although a sinusitis, is fundamentally physiological, and conservative treatment is advocated. When the teeth recede from the floor of the antrum and the antrum develops in volume and therefore in ventilation, the condition generally subsides.

Primary Teeth with Discharging Fistulæ.

Should primary teeth with discharging fistulæ be removed?

During sequestration of the milk teeth fistulous abscesses may develop from which a variety of organisms may be cultured. The nose and sinuses

may be affected through a secondary infection of the tonsil and adenoid tissue from these dental foci. If the physician or ear, nose and throat surgeon finds signs of absorption or secondary spread which defy conservative treatment, then the affected teeth must be removed.

DENTAL INFECTION IN ADULTS.

In adults, progressive caries of an upper molar or bicuspid tooth may result in the development of an apical abscess or granuloma. Tension and pressure or spread by vascular channels lead the infection to the mucosa of the antrum or through it.

Infection due to pyorrhœa can also spread to the sinuses by way of the vascular channels which lead from the gums directly to the sinuses. Infection of the antrum from dental infection is not necessarily preceded by acute symptoms of such infection.

The Protection of the Antrum against Invasion.

How does an antrum protect itself against such an invasion? There is a regular sequence of alternating positive and negative air pressures in the antrum associated with respiration. Failure of these is the first step in the onset of disease. If increased respiration succeeds in maintaining or restoring this balance of respiratory pressure, then a healthy sinus can still be maintained. If it is unsuccessful, then the positive phase is the first to go; and if this is the result of an infective process, then sinusitis ensues. The onset is not due to paralysis of cilia by toxins, as was previously thought. Lavage of the antrum restores the alternating air pressure sequence and results in restoration of ciliary activity.

An antrum with a fully patent ostium can easily dispose of a sudden infective invasion such as occurs when a dental abscess bursts into the antrum on the extraction of a tooth.

Under certain conditions a dental infection may result in a sinusitis:

1. A very virulent streptococcus may give rise to an erysipelas of the mucous membrane.
2. If there has been a slow chronic seeping infection of dental origin into the sinus and a dental infective invasion may suddenly occur.
3. A dental infection invasion may coincide with the actual presence or the immediate onset of an early general respiratory infection.
4. A vasomotor rhinitis or sinusitis may be set up by the infection, that is, the patient is hypersensitive to the organism.

Edema at the ostium is usually a vascular engorgement in first and in early infections. This passes off with the nasal symptoms; otherwise a sinusitis would occur with almost every coryzal attack. Recurrent attacks may lead to a chronic state of latent sinusitis through the development of thickening of the tissues around the ostium.

A copious purulent discharge is generally an indication of good resistance, but some strains of bacteria are cytolytic and by the destruction of the

polymorphonuclear and other white cells they may render the discharge deceptively non-purulent. Thus absence of obvious pus is no proof of non-virulence. In such cases defence must rely mainly on antibodies, and as these take some time to form, we can see the danger of premature operative interference in certain cases.

The virulence of dental infective invasion varies. The same strain of streptococcus causing a meningitis as a complication of a sinusitis may as a low grade metastasis produce sciatica, chronic arthritis *et cetera*.

Organisms may penetrate the epithelium and invade the lymph spaces of the mucosa and create a toxæmia, but no metastases occur unless the organisms reach the blood stream. Toxins generated from organisms in the infected oedematous or thickened mucosa account very often for recurrent catarrhal attacks.

Dental Infection by Direct Extension.

Dental infective invasion may occur by direct extension, the bony wall undergoing absorption or necrosis; or direct invasion of the venules in the bone by organisms may produce a spreading infected thrombosis.

Granulomata.

Granulomata are almost all due to infection. The defence mechanism of a patient against these may be destroyed by acute infections, such as influenza, pneumonia *et cetera*. They may then become active foci of absorption.

Failure to curette a granulomatous socket after dental extraction may lead to the formation of a dental cyst. Dental cysts grow in the line of least resistance, which is either into the old socket area or into the floor of the antrum.

If a patient is suffering from an acute dental infection in the vicinity of an antrum, is it wise to remove the tooth at once or wait till the subsidence of the acute state? If the patient's general condition and well-being improve from day to day in spite of the local condition, then wait for from seven to twenty-one days before extraction of the tooth. Too early extraction may light up a latent osteitis of the floor of the antrum or result in an exacerbation of an active or latent generalized rheumatism. If a fistula from a dental infection produces an abscess on the gum, incise it and wait for a general constitutional improvement before extracting the affected tooth.

Serious damage can be done to the general system, especially to heart, joints *et cetera*, by the too early and too radical removal of these foci in the acute state. If a systemic infection, such as rheumatism, exists, no acute dental focus should be removed without the cooperation of the physician; similarly the cooperation of an ear, nose and throat surgeon is advisable if an acute sinus condition exists in the vicinity of the tooth.

Removal in the quiescent or chronic stage should have no serious complications. Very often an acute stage can be tided over satisfactorily by injecting

such substances as "Omnidin", "S.U.P. 136", "Phlycogen" *et cetera*. Doses of one or two cubic centimetres daily or every second day may materially increase the patient's resistance.

Neuralgia of Sinus Origin and Primary Dental Neuralgia.

What main points differentiate a secondary dental neuralgia of sinus origin from a primary dental neuralgia? Primary dental neuralgia can simulate almost any affection of the head. A sinusitis produces symptoms other than pain, for example, lack of mental concentration, lethargy, elevation of temperature *et cetera*.

The pain of dental neuralgia is out of proportion to the general symptoms. Tenderness on palpation of the maxilla is more pronounced as the anterior wall of the antrum is approached, whereas in dental inflammation it becomes less marked.

A purulent discharge may or may not be present from the nostril on the affected side. If the discharge is offensive, it has probably arisen from a dental infection. Pus may be seen entering the throat from the affected antrum. Earache and catarrhal deafness may be present. Transillumination and X ray examination of the maxillary antra will assist in differentiating between the two conditions.

It should be remembered that a dental infection adjacent to the floor of the sinus often causes a sympathetic congestive sinusitis, with its dullish X ray appearance and accompanying symptoms.

Suspected Devitalized Teeth.

What is the position regarding devitalized teeth which are suspected of acting as a focus to a sinus or a general systemic infection when radiography discloses no evidence of the presence of infection? If a systemic infection is suspected by the physician of originating in a concealed focus, and no other cause can be found, then he should advise the removal of the devitalized teeth. If the ear, nose and throat surgeon diagnoses a latent or active sinusitis on the same side, then extraction of these devitalized teeth should be advised.

The tonsil problem sometimes occupies a similar position when the final decision is with the physician. The only difference is that the loss of teeth is much more serious to the patient than the loss of tonsils.

The Removal of Teeth Adjacent to an Antrum and its Possible Complications.

Since the surgical removal of teeth has been adopted, the risk of removing the tuberosity of the maxilla or the floor of the antrum has been reduced considerably. The stresses and strains transmitted by the teeth to the floor of the antrum consequent on mastication are considerable. The maxilla becomes fused to the tooth around the body of the tooth and the necks of the apices. This is Nature's protection to prevent teeth the apices of which are already in the antrum from penetrating altogether during the heavy pressure of mastication.

The extraction of such teeth by the ordinary forceps method must therefore, in certain cases,

result in the removal of the adjacent bone. Severing of these pillars of adherent bone from the tooth by the burr or chisel before extraction reduces an inevitable fracture of the floor to the absolute minimum and in some cases will prevent an unnecessary fracture. When the tooth penetrating the antrum is removed, you may find a tightly-fitting, paper-like cap of thin antral floor covering the apex, but no jagged adherent bone. This method of extraction of teeth also permits of better flaps for closing any resulting fistula.

A Tooth Root Pushed into the Antrum.

If a tooth root or a tooth is pushed into an antrum, should it be removed at once? If possible, it is advisable to remove the foreign body. If the enlargement of the fistula is not to be increased too much, then recovery through this portal would be best. A naso-pharyngoscope introduced through the fistula may assist in accurately locating the position of the detached root. If it is a small portion of a root, it will generally find its way out through the normal antrum ostium and a good sneeze will recover it later. Washing through the fistula or through an antral puncture may assist its removal.

If the antrum is well ventilated through its normal ostium and has no infection, then a tooth relic may remain there indefinitely and cause no trouble. Nevertheless an offensive purulent sinusitis may result, and in rare cases may be inhaled during sleep.

It is always possible to recover these relics under local anaesthesia through an intranasal opening.

Antral Fistula Caused by Dental Extraction.

If a fistula is made into an antrum during dental extraction, what is the treatment? Leave the bony opening as small as possible. Clean out any loose spicules of alveolus. If the mucosal flaps do not meet, a little undercutting and designing an extension of the incision will assist greatly. See that no sharp bony edges press on and interfere with the circulation of the sutured flaps. Swab the opening carefully with non-irritating antiseptic solutions, such as mercurochrome, 1% to 5%; flavine, 1/1,000 to 1/500; *et cetera*. Do not use any lavage, as you are aiming at a blood clot primary union, and the more your tissues are bathed with blood serum, the better.

Perhaps a small drain for twenty-four hours down to, but not into, the antrum may prevent the formation of an excess of clot beneath your flaps. Suturing with waxed silk, which has been previously softened in hot saline solution, will reduce the reaction in the tissues to a minimum.

Sinusitis Complicating Extraction.

How will you know if a sinusitis is likely to complicate your extraction? If you know you have an antral fistula, keep the patient under observation for three weeks. A history from the patient may forewarn you. A patient singularly free from colds, with a good nasal airway on the same side, is com-

paratively safe, especially if the nasal condition remains clear. A history of recurrent nasal obstruction or influenzas may warrant a consultation to protect yourself.

Persistent Pus from a Tooth Socket.

If on extracting an upper bicuspid or molar, pus keeps on pouring from the socket, what is the treatment? Confirm that there is a fistula into the empyematosus antrum by passing in a probe carefully. The early curing of the infection of the antrum is essential to the healing of the fistula.

It is possible that the fistula may relieve the tension in the antrum sufficiently for the congestion of the mucosa to subside and permit of the reestablishment of antral ventilation through its ostium. On the other hand, in a case such as this there may be present a history of recurrent or chronic sinus infection when polypi or a cystic mucosa will be a complicating factor. The reestablishment of sufficient ventilation through the ostium in such cases then will be doubtful. Unless an intranasal drainage is effected at once, this type of case will produce a chronic oro-antral fistula through which polypi may even protrude into the mouth.

A radical operation is unnecessary as an initial step and will in many cases prove unnecessary later if sufficient ventilation is afforded intranasally. If the condition is very acute it may be found advisable to reduce the quantity of pus by antral lavage and thus to improve the general condition of the patient prior to any operative interference.

The waiting for a few days makes a wonderful difference to the patient's resistance, and this is of great assistance in any subsequent operative interference.

A secondary suturing of the fistula may be necessary subsequently, or perhaps some weekly applications of silver nitrate or trichloroacetic acid to the fistula (if narrow) may be sufficient.

If all the foregoing procedures are carried out and there is still a discharge from the antrum, what is the cause? In all probability an osteitis of the antral wall, a sequestrum, or a polypoidal or pyocystic membrane is present. If this does not improve with constant lavage over some three weeks or so, then it will be essential to explore the antrum through the anterior wall and to remove the diseased or sequestered bone or diseased membrane.

Chronic Suppurating Oro-Antral Fistula.

If a patient comes to you with a chronic suppurating oro-antral fistula, what is the treatment? If an antrum has efficient ventilation, then oral reinfection through a fistula does occur. If the ventilation of the sinus is inefficient, then oral reinfection is almost certain. It is therefore essential in these cases to effect intranasal drainage. A secondary suture will be necessary, or a system of flaps.

Case Histories.

The following two cases of dental cyst formation are of interest.

The first case is one of dental cyst with a fistula into the antrum.

A male patient, aged thirty-four years, was referred to me in May, 1935. He had been operated on on three previous occasions for dental cysts on both sides of the upper alveolus. He had complained of discomfort over the left side of the face for three weeks. On stooping the discomfort increased and a blood-stained discharge came from the left nostril. He had had a post-nasal discharge into the throat for as long as he could remember. Transillumination revealed a relatively dull antrum on the left side, but an antral wash-out was clear. A skiagram revealed a dental cyst on the left side. On the right side the antral floor came down to the alveolar margin, owing to previous operative interference. To delimit the floors of the antra two cubic centimetres of lipiodol were injected into the sinuses on each side and skiagrams were taken.

At operation an infected cyst on the left upper alveolar margin was opened and its bony margins were reduced to the level of the antral floor, which had been laid bare by the erosion of the cyst. A small fistula entered the antrum. An intranasal opening into the antrum was made. The alveolar mucosa was closed and healing was by first intention. The patient has lost all neuralgias and headaches and has improved mentally and physically.

The second case is one of dental cyst invading half of the maxillary antrum.

A female patient, aged thirty years, was referred to me in May, 1935. She had complained of neuralgic pain over the left maxilla for over twelve months. There was no history of colds or of yellow discharge either from the nostrils or post-nasally. A week previously a left upper bicuspid had been extracted on account of a left maxillary neuralgia without relief. The antrum was tender on palpation and dull on transillumination. X ray investigations showed a dental cyst invading half the maxillary sinus on the left side.

At operation the alveolar cyst was investigated by Mr. C. H. Terry, who removed another tooth, the three roots of which penetrated the antral floor. In spite of this, the floor did not rupture, but was left with four perforations, the fourth having been due to the tooth extracted the week previously. I then incised the mucoperiosteum over the anterior wall of the antrum, and when it was reflected a blue membrane presented itself through a circular smooth-edged aperture in the bone, the size of a sixpence. This proved to be due to pressure erosion from the dental cyst. The cyst and the cystic mucosa of the antrum were removed through the erosion of the anterior surface of the maxilla and an intranasal drainage was effected. The buccal opening was closed. No packing was used. The condition healed without any subsequent nasal or oral discharge. The chronic neuralgia subsided completely.

Reports of Cases.

BIPARTITE OVARIES.

By ARTHUR J. MOLLISON, M.B., Ch.M. (Sydney),
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THE following case of a woman who possessed virtually four ovaries is worthy of note.

Mrs. H., aged thirty-one years, was admitted to the Canberra Community Hospital during December, 1935. Menstruation had commenced at the age of twelve years and had always been fairly profuse, though never so profuse that she was compelled to seek medical attention. In appearance she is of medium height, moderately stout, well built, blonde and very active. Before marriage she was an obstetric nurse.

Her previous medical attention had been practically nil; she had had a slight attack of pyelitis in 1935 and of appendicitis in 1923. Her obstetric history was of two confinements. The first confinement was in 1930, when, after some toxæmia in the later months, she had internal version performed on account of an extended foetal head and a small pelvis. The female child was stillborn. The second pregnancy was in 1933, when she again showed some toxæmia in the later months; she underwent medical induction of labour eighteen days before the estimated date of confinement. She had a five hours labour with a living female child.

The condition for which she sought attention in December was a complaint of pain in the left iliac fossa; her period was overdue eleven days, and she was more nauseated than with either previous pregnancy. Examination *per vaginam* revealed a mass in the left fornix, and the provisional diagnosis made was unruptured ectopic gestation. However, on section it was found that instead of that condition she had, in addition to each normal sized ovary, another ovary of similar size on each side, joined by a band, about three to six millimetres (one-eighth to one-quarter of an inch) thick, to each normally situated ovary. All four were macroscopically normal, fully-functioning ovaries. On the left side in the outer ovary was an apparently normal *corpus luteum* of pregnancy. The uterus was slightly enlarged and the veins of the broad ligaments, especially the left, were congested and varicose. This, I concluded, caused the pain.

The abdomen was closed without further interference. The pregnancy is pursuing its normal course.

I am deeply indebted to Sir Colin MacKenzie, of the Institute of Anatomy, for having searched out and made available literature in which there is no report of a similar condition. Bland Sutton says that an accessory ovary quite separate from the main gland has yet to be described. Other authorities refer to small globular pedunculated bodies of the same structure as the normal ovaries, and varying in size from that of a pea to a hazelnut. It is also recorded that an ovary may be more or less completely divided into two parts by fissures as a result of constriction by peritonitic bands in early embryonic life. But in no instance was the presence of four average sized and apparently normally functioning ovaries, all showing the scars of ordinary *corpora lutea*, described with each pair joined.

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result in the removal of the adjacent bone. Severing of these pillars of adherent bone from the tooth by the burr or chisel before extraction reduces an inevitable fracture of the floor to the absolute minimum and in some cases will prevent an unnecessary fracture. When the tooth penetrating the antrum is removed, you may find a tightly-fitting, paper-like cap of thin antral floor covering the apex, but no jagged adherent bone. This method of extraction of teeth also permits of better flaps for closing any resulting fistula.

A Tooth Root Pushed into the Antrum.

If a tooth root or a tooth is pushed into an antrum, should it be removed at once? If possible, it is advisable to remove the foreign body. If the enlargement of the fistula is not to be increased too much, then recovery through this portal would be best. A naso-pharyngoscope introduced through the fistula may assist in accurately locating the position of the detached root. If it is a small portion of a root, it will generally find its way out through the normal antrum ostium and a good sneeze will recover it later. Washing through the fistula or through an antral puncture may assist its removal.

If the antrum is well ventilated through its normal ostium and has no infection, then a tooth relic may remain there indefinitely and cause no trouble. Nevertheless an offensive purulent sinusitis may result, and in rare cases may be inhaled during sleep.

It is always possible to recover these relics under local anaesthesia through an intranasal opening.

Antral Fistula Caused by Dental Extraction.

If a fistula is made into an antrum during dental extraction, what is the treatment? Leave the bony opening as small as possible. Clean out any loose spicules of alveolus. If the mucosal flaps do not meet, a little undercutting and designing an extension of the incision will assist greatly. See that no sharp bony edges press on and interfere with the circulation of the sutured flaps. Swab the opening carefully with non-irritating antiseptic solutions, such as mercurochrome, 1% to 5%; flavine, 1/1,000 to 1/500; *et cetera*. Do not use any lavage, as you are aiming at a blood clot primary union, and the more your tissues are bathed with blood serum, the better.

Perhaps a small drain for twenty-four hours down to, but not into, the antrum may prevent the formation of an excess of clot beneath your flaps. Suturing with waxed silk, which has been previously softened in hot saline solution, will reduce the reaction in the tissues to a minimum.

Sinusitis Complicating Extraction.

How will you know if a sinusitis is likely to complicate your extraction? If you know you have an antral fistula, keep the patient under observation for three weeks. A history from the patient may forewarn you. A patient singularly free from colds, with a good nasal airway on the same side, is com-

paratively safe, especially if the nasal condition remains clear. A history of recurrent nasal obstruction or influenzas may warrant a consultation to protect yourself.

Persistent Pus from a Tooth Socket.

If on extracting an upper bicuspid or molar, pus keeps on pouring from the socket, what is the treatment? Confirm that there is a fistula into the empyematous antrum by passing in a probe carefully. The early curing of the infection of the antrum is essential to the healing of the fistula.

It is possible that the fistula may relieve the tension in the antrum sufficiently for the congestion of the mucosa to subside and permit of the reestablishment of antral ventilation through its ostium. On the other hand, in a case such as this there may be present a history of recurrent or chronic sinus infection when polypi or a cystic mucosa will be a complicating factor. The reestablishment of sufficient ventilation through the ostium in such cases then will be doubtful. Unless an intranasal drainage is effected at once, this type of case will produce a chronic oro-antral fistula through which polypi may even protrude into the mouth.

A radical operation is unnecessary as an initial step and will in many cases prove unnecessary later if sufficient ventilation is afforded intranasally. If the condition is very acute it may be found advisable to reduce the quantity of pus by antral lavage and thus to improve the general condition of the patient prior to any operative interference.

The waiting for a few days makes a wonderful difference to the patient's resistance, and this is of great assistance in any subsequent operative interference.

A secondary suturing of the fistula may be necessary subsequently, or perhaps some weekly applications of silver nitrate or trichloroacetic acid to the fistula (if narrow) may be sufficient.

If all the foregoing procedures are carried out and there is still a discharge from the antrum, what is the cause? In all probability an osteitis of the antral wall, a sequestrum, or a polypoidal or pyocystic membrane is present. If this does not improve with constant lavage over some three weeks or so, then it will be essential to explore the antrum through the anterior wall and to remove the diseased or sequestrated bone or diseased membrane.

Chronic Suppurating Oro-Antral Fistula.

If a patient comes to you with a chronic suppurating oro-antral fistula, what is the treatment? If an antrum has efficient ventilation, then oral reinfection through a fistula does occur. If the ventilation of the sinus is inefficient, then oral reinfection is almost certain. It is therefore essential in these cases to effect intranasal drainage. A secondary suture will be necessary, or a system of flaps.

Case Histories.

The following two cases of dental cyst formation are of interest.

The first case is one of dental cyst with a fistula into the antrum.

A male patient, aged thirty-four years, was referred to me in May, 1935. He had been operated on on three previous occasions for dental cysts on both sides of the upper alveolus. He had complained of discomfort over the left side of the face for three weeks. On stooping the discomfort increased and a blood-stained discharge came from the left nostril. He had had a post-nasal discharge into the throat for as long as he could remember. Transillumination revealed a relatively dull antrum on the left side, but an antral wash-out was clear. A skiagram revealed a dental cyst on the left side. On the right side the antral floor came down to the alveolar margin, owing to previous operative interference. To delimit the floors of the antra two cubic centimetres of lipiodol were injected into the sinuses on each side and skiagrams were taken.

At operation an infected cyst on the left upper alveolar margin was opened and its bony margins were reduced to the level of the antral floor, which had been laid bare by the erosion of the cyst. A small fistula entered the antrum. An intranasal opening into the antrum was made. The alveolar mucosa was closed and healing was by first intention. The patient has lost all neuralgias and headaches and has improved mentally and physically.

The second case is one of dental cyst invading half of the maxillary antrum.

A female patient, aged thirty years, was referred to me in May, 1935. She had complained of neuralgic pain over the left maxilla for over twelve months. There was no history of colds or of yellow discharge either from the nostrils or post-nasally. A week previously a left upper bicuspid had been extracted on account of a left maxillary neuralgia without relief. The antrum was tender on palpation and dull on transillumination. X ray investigations showed a dental cyst invading half the maxillary sinus on the left side.

At operation the alveolar cyst was investigated by Mr. C. H. Terry, who removed another tooth, the three roots of which penetrated the antral floor. In spite of this, the floor did not rupture, but was left with four perforations, the fourth having been due to the tooth extracted the week previously. I then incised the mucoperiosteum over the anterior wall of the antrum, and when it was reflected a blue membrane presented itself through a circular smooth-edged aperture in the bone, the size of a sixpence. This proved to be due to pressure erosion from the dental cyst. The cyst and the cystic mucosa of the antrum were removed through the erosion of the anterior surface of the maxilla and an intranasal drainage was effected. The buccal opening was closed. No packing was used. The condition healed without any subsequent nasal or oral discharge. The chronic neuralgia subsided completely.

Reports of Cases.

BIPARTITE OVARIES.

By ARTHUR J. MOLLISON, M.B., Ch.M. (Sydney),
Canberra.

THE following case of a woman who possessed virtually four ovaries is worthy of note.

Mrs. H., aged thirty-one years, was admitted to the Canberra Community Hospital during December, 1935. Menstruation had commenced at the age of twelve years and had always been fairly profuse, though never so profuse that she was compelled to seek medical attention. In appearance she is of medium height, moderately stout, well built, blonde and very active. Before marriage she was an obstetric nurse.

Her previous medical attention had been practically nil; she had had a slight attack of pyelitis in 1935 and of appendicitis in 1923. Her obstetric history was of two confinements. The first confinement was in 1930, when, after some toxæmia in the later months, she had internal version performed on account of an extended fetal head and a small pelvis. The female child was stillborn. The second pregnancy was in 1933, when she again showed some toxæmia in the later months; she underwent medical induction of labour eighteen days before the estimated date of confinement. She had a five hours labour with a living female child.

The condition for which she sought attention in December was a complaint of pain in the left iliac fossa; her period was overdue eleven days, and she was more nauseated than with either previous pregnancy. Examination *per vaginam* revealed a mass in the left fornix, and the provisional diagnosis made was unruptured ectopic gestation. However, on section it was found that instead of that condition she had, in addition to each normal sized ovary, another ovary of similar size on each side, joined by a band, about three to six millimetres (one-eighth to one-quarter of an inch) thick, to each normally situated ovary. All four were macroscopically normal, fully-functioning ovaries. On the left side in the outer ovary was an apparently normal *corpus luteum* of pregnancy. The uterus was slightly enlarged and the veins of the broad ligaments, especially the left, were congested and varicose. This, I concluded, caused the pain.

The abdomen was closed without further interference. The pregnancy is pursuing its normal course.

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For their recognition clinical observation by the methods of the late Sir James Mackenzie is advocated. Presumably Mackenzie's plan of wait and see is included, and since chronic streptococcal toxæmia begins at the age of six, and the end result, chronic rheumatism, appears at about the age of forty, a long wait will be necessary before the value of the prophylactic treatment can be assessed.

The first two chapters contain full descriptions of chronic toxæmia in general, and chronic infective toxæmia, which, in most cases, is produced by depletion of the alkaline reserves of the body by an increased acidity of the tissues and of the excretions from the skin, lungs and kidneys. Inclusion of the biochemical findings in a typical case would be of interest.

A chapter is devoted to the history of the streptococcus, which is regarded as the cause of much evil, especially in the inhabitants of overcrowded industrial areas. This is followed by a detailed and interesting account of the clinical features of chronic streptococcal toxæmia.

The reader is prepared for the formidable list of symptoms by the statement that the streptococcus is most protean in its effects. Three stages are described, the first occurring in childhood and the second beginning in adolescence and continuing to about the age of forty, when a transition to the third stage, either gradual or fairly rapid, occurs. Further independent observations will be necessary before these views on the symptomatology of chronic streptococcal toxæmia can be accepted.

The condition is recognized by taking swabs from the naso-pharynx and estimating the percentage of streptococci present. This is claimed to be more accurate than the Dick test in scarlet fever, but the results of a comparable test in these cases might be worth having. The significance attached to an increase of streptococci in the pharynx when the general health is below normal requires further investigation.

Intermittent courses of streptococcal vaccine are advised for the treatment of chronic streptococcal toxæmia, and the duration of this treatment is about four years. Many other forms of treatment are also used. The diet list is distinguished by numerous prohibitions, and in certain complicated cases the diet appears to be very meagre.

The author's efforts to maintain a detached and judicial attitude are commendable, and his objective is excellent. The book is printed clearly, and perhaps this serves to emphasize rather numerous misprints and occasional errors in grammar.

THE TONSILS AND SEPSIS IN THE NASO-PHARYNX.

"TONSILS AND NASO-PHARYNGEAL SEPSIS", by E. A. Peters, is a small book of 92 pages, including an introduction and an index.¹ The most notable features of the book are the chapters dealing with the anatomy and pathology of the tonsil itself, illustrated by several photomicrographs. This study is an excellent explanation of the rationale of the influence of tonsillar sepsis on general health, but the references to tonsillar influences on the auditory apparatus are very meagre. A comprehensive table is quoted from Irwin Moore giving a list of diseases resulting from tonsillar focal infection, but several of these, such as appendicitis, bronchiectasis, functional psychoses, require definite evidence to establish the truth of the statement; in fact the one criticism to be levelled against this book is that it is written in an extremely dogmatic style, whereas many of the statements should be accompanied by references or reasonable explanations. Criticism can also be levelled against some of the instructions given for the operation for the removal of tonsils, as: "Dissection under local anaesthesia is carried out with the patient in a sitting posture." Many surgeons hold that, particularly in local anaesthesia operations, the recumbent is very much better than the sitting posture. Although it is not claimed to replace tonsillectomy, a method of treatment of tonsillar

sepsis by evacuation and injection of antiseptic is described, which the author uses with benefit to the patient when surgery is contraindicated.

With regard to the treatment of naso-pharyngeal sepsis, a formula is given in which olive oil is used in preference to liquid paraffin, as olive oil is miscible with mucus and thus enhances the bactericidal power of the mucus. The formula is: *Unguenti Hydrargyri Nitratis Diluti*, half a drachm; menthol, ten grains; *Olei Olive*, to one ounce. This is applied as a paint into the nostrils at night. The oil is carried into the pharynx and so over the tonsil. Half the above strength is used in young children. Naso-pharyngeal as well as sinus infection in young children is one of the difficult problems of today, and any genuine attempt to deal with this satisfactorily is worthy of study.

In fine this book deals with a very important subject; the photomicrographic plates are instructive, and there is much useful, if condensed, information. It is a small volume, printed in clear type, which makes reading easy, even when one is tired at the end of a worrying day's work.

VENEREAL DISEASE.

In his preface to his pocket monograph, "The Treatment of Venereal Disease in General Practice", Dr. Thomas Anwyl-Davies admits that much is omitted, and this is apparent when one reads the book.¹ He pleads in excuse "that only the specialist devoting his whole time" to venereology "can hope to keep abreast of the complex problems that arise in the treatment of venereal disease" and that "to the busy general practitioner this more specialized knowledge is not possible, so that while the practitioner can carry out the routine treatment, at various points in the conduct of the case the consultant's aid is necessary". And so with this basic idea the book deals with the routine treatment of common venereal conditions.

The information given is sound and definite. The printing is clear and there are seven illustrations.

This little book may be a useful guide for the general practitioner who is content to carry out the treatment of venereal disease to a limited degree and to seek the aid of the consultant when complications arise.

LIVER FUNCTION.

In a brief study of the diurnal periodicity in liver function, in metabolism and in sleep Forsgren protests against the prevailing view that the activity of the liver is continuous.² Investigation of the form, size, colour, texture, microscopic appearance of the liver, glycogen storage, glycogen depletion and bile formation in various animals demonstrates a true liver rhythm. In the human liver secretory activity is dominant by day, assimilatory by night. The author is so enthusiastic about his thesis that he exaggerates its importance and appears to regard it as introducing a new epoch into physiology, pathology and medicine. That an hepatic rhythm must be present can be assumed a priori from the diurnal fluctuation of body temperature alone. Dr. Forsgren regards the mid-day siesta as physiological and independent of the times and amounts of meals, quoting in support of his contention Mr. Winston Churchill and Mr. Sinclair Lewis. This period of somnolence is correlated with a special phase of liver action and with maximal diuresis. A rhythm in responsiveness to insulin is also demonstrable.

¹"The Treatment of Venereal Disease in General Practice", by T. Anwyl-Davies, M.D., B.S., M.R.C.P.; 1935. London: John Bale, Sons and Danielsson, Limited. Foolscape 8vo, pp. 202. Price: 7s. 6d. net.

²"Über die Rhythmik der Leberfunktion, des Stoffwechsels und des Schlafes", by E. Forsgren; 1935. Stockholm: Isaac Marcus Boktryckeri-Aktiebolag. Imperial 8vo, pp. 56, with illustrations.

¹"Tonsils and Naso-Pharyngeal Sepsis", by E. A. Peters, M.D., F.R.C.S.; 1935. London: Baillière, Tindall and Cox. Crown 8vo, pp. 99, with illustrations. Price: 5s. net.

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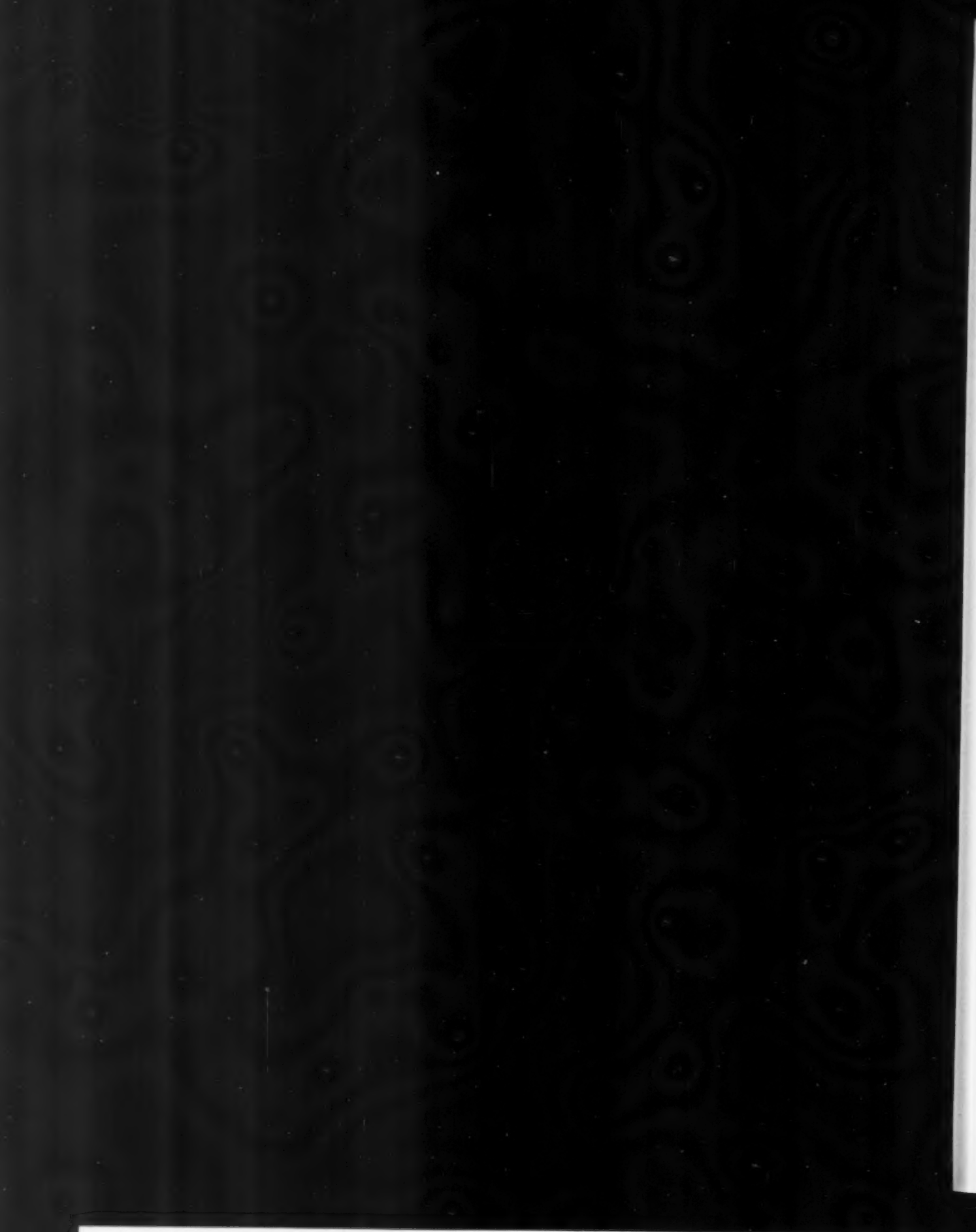
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The Medical Journal of Australia

SATURDAY, APRIL 4, 1936.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

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THE MEETING OF THE FEDERAL COUNCIL.

A REPORT of the recent meeting of the Federal Council of the British Medical Association in Australia is published in this issue. The activities of the Federal Council are, or should be, well known to every member of the Association in Australia; but medical practitioners are probably like every other body of people with common interests who have to undertake concerted action—they choose their representatives or allow them to be chosen by others and often show no further interest until they are brought face to face with some decision or course of action which, they suddenly decide, is ill-advised, or of which they feel they cannot approve. The truth of the matter is that if the individual member tries to understand the magnitude, the complications and the difficulties of the problems with which the representative has to deal, he will realize that the actions of the representative are generally not only justifiable, but desirable. The medical profession of Australia has to face many important questions. It has to

concern itself with the study of the prevention and cure of disease; it has to see that the discoveries of medical science are used for the benefit of every member of the community; and at the same time it has to be careful that its own members are not exploited by governments or other bodies that neither understand nor wish to understand its objectives or its method of working. These are the things with which the Federal Council is concerned.

The first comment in connexion with the recent meeting of the Federal Council has to do with the formation of a medical research council for Australia. The formation of such a body was first suggested by the Royal Commission on Health as long ago as 1925. Nothing was done at that time, and after some fitful and perhaps pitiable attempts by the medical profession to awaken the dormant political conscience the subject was dropped. It was brought into prominence again about twelve months ago as a result of the action of Dr. Earle Page, who was then Acting Prime Minister. Dr. Page asked the Federal Council to listen to addresses by Sir Colin MacKenzie and Dr. J. H. L. Cumpston on the subject of research work that it was thought should be undertaken at Canberra. When the Federal Council replied to these addresses by pointing out to the Acting Prime Minister that his objective in research work at Canberra could best be attained by establishing a medical research council in accordance with the suggestion of the Royal Commission on Health, he did not reply. His silence was broken last September, when, at the annual dinner of the British Medical Association at Melbourne, he referred to the establishment of a research council in a speech which raised the hopes of all who were present. Since that time, in response to urgings from the Federal Council, a further reply from the Minister has been received that the matter is still under consideration. The Federal Council at its recent meeting determined not to allow the matter to drop. Perhaps the letter that will be written to the Minister will remind him that interest in this matter has been reawakened by himself. That he is alive to the situation is obvious; whether he will be able to make his colleagues in the cabinet aware of the need is

another matter. In any case, the Government has had long enough for its "consideration".

The next subject of importance discussed at the meeting was the holding at Adelaide of the fifth session of the Australasian Medical Congress (British Medical Association). Sir Henry Newland has been appointed President of the session; Dr. A. D. Lamphee and Dr. C. B. Sangster are Joint Honorary Secretaries, and Dr. F. S. Poole is Honorary Treasurer. The date of the congress is to be August 23 to 28, 1937; and the Council of the University of Adelaide has generously placed its buildings at the disposal of the Congress. This preliminary announcement will doubtless make members of the Branches think of the possibility of going to Adelaide; as time goes on and details of the arrangements are published in this journal, the thought, we hope, will be translated into action.

Lastly we would point out that in the future the work of the Federal Council will in all probability be expanded. The Council has done for the Branches work of the highest order, and has done it with the absurdly small annual contribution of two shillings per member. As a result of the conference held last September between officials of the Parent Body and the Federal Council, the Parent Body has determined to give to the Federal Council the sum of £1,000 *per annum* for a period of three years towards the expenses of the Federal Council and its secretariat. In expressing the appreciation of Australian members for the generosity of the Parent Body, we would urge the Federal Council to expend the money granted it by the Home authorities in extending its work; and there are many ways in which this might be done. That the Parent Body has given to the Federal Council a sum of three thousand pounds should prove to the members of the Australian Branches that they must be prepared to pay for the organization by which they live and move and have their professional being. In proportion to his income the average trades unionist pays much more for his organization than does the member of the British Medical Association. Like the trades unionist, the member of the British Medical Association endeavours to uphold the rights, the honour and the dignity of his calling,

but he has this as a secondary objective. His first objective is the advancement of medical science and its application to humanity; to pay for this is necessary and worth while.

Current Comment.

TREATMENT OF CARDIAC ŒDEMA.

CURRENT medical literature lends support to the belief that drugs such as "Salyrgan" may be used with safety over long periods of time for the treatment of cardiac Œdema. In 1934 I. M. Dixon said that so little were toxic effects to be feared that one patient had received, without harm 270 injections, or more than one injection per week, during the space of five years. But safe and efficient in action or not, one disadvantage attending the use of "Salyrgan" and "Novasurol" is that they must be administered parenterally. This necessity may present difficulties to the practitioner unaccustomed to the technique of intravenous medication. Unskilful manipulations, with resultant leakage of the drug into the tissues, may result in painful swelling and even sloughing at the site of injection, though in the case of "Salyrgan" this accident may be avoided by diluting the drug up to ten cubic centimetres with distilled water. No improvement in the degree of cardiac Œdema has been known to follow the oral administration of "Salyrgan", though mild successes have been reported after its injection into the rectum. John Parkinson and William A. R. Thomson,¹ in considering these matters, support the opinion of Hermann that a combination of organic mercurial diuretics and purine bases is productive of greater diuresis than that obtained when these substances are given separately.

One such combination is a complex sodium salt of carboxylic acid and allylamidmethoxymercuric acid in union with theophyllin. The drug may be given by the intramuscular or intravenous route in doses of one to two cubic centimetres, one cubic centimetre being the equivalent of 0.10 gramme of the mercurial salt with 0.15 gramme of theophyllin. In addition, the preparation has now been offered to the medical world in the form of a suppository bearing the trade name of "Novurit". Parkinson and Thomson, employing these suppositories, have treated twelve patients suffering from congestive heart failure with Œdema. Of these twelve, two were excluded from the final report.

The patients were put to bed and given a diet low in sodium chloride. The fluid intake was reduced to an amount between twenty and thirty ounces per day. Until the urinary output was found to remain constant in each case, no treatment other than rest was considered. This point having

¹ *The Lancet*, January 4, 1936.

been reached, "Novurit" suppositories or "Novurit" and "Salyrgan" were administered every third day. In this manner each patient received four suppositories of "Novurit", one intravenous injection of the same drug, and one intravenous dose of "Salyrgan". In all cases there was a very satisfactory increase in diuresis with a striking reduction of the hepatic enlargement, which made the liver impossible of palpation at the end of a fortnight. It was observed that diuresis seemed to increase more rapidly but to diminish more quickly after the use of "Salyrgan" than after the use of the other two preparations. The use or avoidance of enemata and aperients appeared to have little or no bearing upon the satisfactory action of the suppositories of "Novurit". These suppositories caused no local or general irritation.

The case reports of Parkinson and Thomson clearly show that the diuresis following the employment of this rectal medication is not so great as that resulting from intravenous methods. The suppositories contain a larger quantity of the drug than the preparation used intravenously, but the rectal absorption is relatively slow as compared with that resulting from intravenous therapy. But no diuretic in suppository form which has power to produce a flow of 206 ounces of urine in twenty-four hours (an actual happening in one case of the series) can be regarded as anything but a useful weapon in the treatment of cardiac oedema. Added to this, intravenous administration of any drug is sometimes extremely difficult or impossible if extreme oedema of the upper extremities is present. The medical attendant faced with this problem should, by means of rectal medication with "Novurit", find a reliable solution ready to hand. Further reports on the subject will be awaited with interest.

VITAMIN C AND HÆMORRHAGIC CONDITIONS.

ONE of the outstanding features of scurvy is the occurrence of hæmorrhages. Vitamin C (ascorbic acid) is definitely curative of scurvy. H. Engelkes points out that ascorbic acid may also be valuable in "conditional" scurvy.¹ In a "conditional" deficiency a vitamin intake sufficient for a normal person is inadequate when abnormal conditions are present. Such conditions may include insufficient absorption, destruction by intestinal organisms or by a general infection, and possibly too rapid renal excretion or endocrine disorder. In 1934 W. Stepp reported the results of treatment by ascorbic acid of hæmorrhagic conditions other than scurvy. His co-workers, A. Böger and H. Schröder, observed that in such disorders the plasma protein was diminished, the albumin more than the globulin, with a lowered albumin/globulin ratio. Injection of ascorbic acid resulted in a reversal of such findings. Again hæmaturia ceased immediately in a patient to whom ascorbic acid was given. In

Henoch's purpura similar benefit resulted. Injection is more certain of results than oral administration for the reasons already indicated. Also in 1934 Böger and Schröder reported cessation of serious intestinal hæmorrhage in a patient with hæmophilia receiving ascorbic acid. In a case of essential thrombopenia, two days after the beginning of injections hæmorrhages in the skin and mucous membranes ceased and two days later hæmaturia disappeared. The bleeding time was reduced, the thrombocyte count rose and the protein content and albumin/globulin ratio of the plasma increased. Bleeding ceased long before the number of platelets rose appreciably. So it was considered that reduction of platelets was not the only decisive factor in causing the hæmorrhages. Other possible factors are alterations in the plasma or in the permeability of the capillary walls. It was suggested that ascorbic acid might be of use in uterine, renal or gastric hæmorrhages or those associated with icterus. E. Vogt has reported good results in gynæcological hæmorrhages and in thrombopenia.

Engelkes gives details of five hæmorrhagic cases treated by the intravenous injection of 150 or 200 milligrammes of ascorbic acid daily. It has been estimated that 50 milligrammes constitute a sufficient daily quantity for an adult; such an amount is contained in 100 cubic centimetres of orange juice. The first patient was a man of sixty-four years, suffering from gall-stones and with essential thrombopenia. He had profuse epistaxis with no discernible local cause and, later, hæmaturia, melena and hæmorrhages in the skin of the neck, face, extremities and, to a less degree, the trunk; also hæmorrhages occurred on the inside of the cheeks, palate and the under-surface of the tongue. The blood pressure was conspicuously elevated. Blood examination revealed 4,700,000 red cells per cubic millimetre; hæmoglobin value was 90%; the leucocytes numbered 6,000 per cubic millimetre and the thrombocytes, 3,000; the bleeding time was ten minutes. Blood clot did not contract. After two days' treatment with vitamin C there were no new hæmorrhages in the skin or mucous membranes, and after six days the urine was free of blood. The long bleeding time fell within a few days to three minutes, and after seven days to one and a half minutes, at which it remained after treatment had ceased for several weeks. Thrombocytes rose to 360,000. After only a few days the blood clot retracted normally. The high blood pressure fell materially during treatment. Plasma albumin and the albumin/globulin ratio both increased during treatment. The whole improvement in the patient's condition was remarkable and seemingly due to the vitamin therapy, but Engelkes admits the possibility of the recovery being spontaneous.

The other patients reported by Engelkes included a boy who suffered from *purpura infectiosa*, a woman who suffered from essential hæmaturia, a patient with carcinoma of the uterus who suffered from intense hæmaturia and ecchymoses on the legs,

¹ *The Lancet*, December 7, 1935.

a man with cirrhosis of the liver who manifested large effusions of blood under the skin of the abdomen and penis. In all these instances the administration of vitamin C had a beneficial effect. Engelkes observed no unpleasant symptoms after the use of large doses of ascorbic acid, and he pertinently observes that the patients treated suffered from capillary hæmorrhages. He states that when the bleeding is venous or arterial, as from a duodenal ulcer, he would not attempt to treat it in this way.

The cases here related are all interesting, but too few in number to warrant definite conclusions. The more vitamins are studied, the more amazing their significance becomes, even in most unexpected places. Much more investigation is necessary before a categorical opinion can be expressed as to the efficacy of vitamin C in diverse hæmorrhagic conditions. Such conditions are notoriously rebellious to treatment, and even certain forms of snake venom have been employed to combat them. Observations such as those reported by Engelkes may possibly lead to a better understanding of what are known as "conditional" vitamin deficiencies.

AN OBSTETRIC INVESTIGATION.

IN the report of the Director-General of Public Health of New South Wales for the year 1934, recently to hand, there appears a most interesting and important account of an investigation of 1,073 maternal deaths that occurred in New South Wales during the years 1929-1933.¹ The investigation has been carried out by Dr. E. Sydney Morris, Director-General of Public Health, and Dr. E. Sandford Morgan, Director of the Division of Maternal and Baby Welfare.

Before entering on an account of their investigations, the authors of the report point out that statistics of maternal death rates from different countries are not comparable because they are not based on similar criteria. For example, the statistics of a country which includes amongst maternal deaths all deaths from criminal abortion cannot be compared with statistics of a country which regards these deaths as due to homicide. The laity does not understand this, and politicians are pleased to overlook it when they are making impassioned appeals for funds that are to be devoted to maternal welfare.

During the period under review 1,186 puerperal deaths occurred in New South Wales; these deaths were classified as puerperal by the Government Statistician according to the International Classification of Causes of Death. Complete histories of 1,073 of these deaths were obtained. Upon receipt of a death certificate from which it appears that pregnancy might possibly have existed and might have been the primary or a contributory cause of death, the Government Statistician communicates

with the medical practitioner who issued the certificate and ascertains whether there was any association with pregnancy and whether the death should be regarded as puerperal. These precautions will undoubtedly make for efficiency and accuracy in the classification of deaths; at the same time, Dr. Morris and Dr. Morgan think that they are probably the chief factor tending to make the New South Wales figures not comparable with those of other countries. In the course of this investigation medical attendants were interviewed, midwives were interviewed, and records of both public and private hospitals were investigated. In addition, the homes and relatives of the patients were sometimes visited, so that all the relevant factors might be discovered. The classification of deaths in the series, with the number falling into each group, is as follows: Sepsis, 167 deaths; eclampsia, 136; operative shock *et cetera*, 86; *ante partum* hæmorrhage, 91; *post partum* hæmorrhage, 64; other toxæmias, 132; embolism and sudden death, 101; extrauterine gestation, 71; abortions, 201; unclassified, 24. As an addendum 198 deaths from illegal operations (not included in the total of 1,073) are analysed. In the available space it will not be possible to do more than refer to the main features of some of these groups.

Of the 167 deaths due to sepsis, 67 followed normal labour (61) or the low application of forceps (6). This is a most interesting group. *Résumés* of many of the histories are given. The proportion of deaths from sepsis following normal labour was highest amongst patients confined in their own homes, next in private hospitals, and lowest in public hospitals. The number of deaths in public maternity hospitals, "where everything in the way of equipment and skilled attention is available", was eleven. Two of the eleven patients were aborigines who died in the country. The remaining nine deaths occurred in the metropolitan area and all in the same institution. Two of the nine patients were infected before admission to hospital, one was readmitted infected, and one was a single girl who had made repeated attempts to procure abortion and had succeeded in doing so on at least two previous occasions. One woman was suspected of being tuberculous and finally died of infective endocarditis; one woman had "solid albuminuria" on admission to hospital and the remaining three deaths were quite "unaccountable". This series of deaths, all occurring in the one institution, are of particular interest in view of the work of Colebrook, referred to in this journal at page 437 of the issue of March 28, 1936. In the discussion in this report on the deaths from sepsis reference is made to the view that infection can come from some person in attendance on the patient. It is not stated, however, whether the staff, medical and nursing, of the institution in question was submitted to a searching examination for the discovery of a focus of infection. On the information given in the report this would appear to be indicated. In several of the cases in which death did not occur in public hospitals interesting features may be

¹ Reprints of this report may be obtained on early application to the Director-General of Public Health, Macquarie Street, Sydney.

noted. In several cases there was an association between the puerperal infection and other hæmolytic infections, such as scarlet fever, occurring in relatives or contacts of the patient. In one case three vaginal examinations were made by medical attendant and nurse, neither of whom wore gloves or gown.

One hundred patients died from sepsis following abnormal labour. Sixty-four of these deaths occurred in the metropolitan area and thirty-six in the country. Only six of the patients had been sent to Sydney because difficulties were expected. The view is expressed that country doctors, midwives and bush nurses are all in a better position for maintaining continuous and watchful care over the expectant mother. In this section reference is made to necessary manipulation as a causative factor; sometimes the precautions taken were all that could be desired. Sometimes "errors in judgement" on the part of the medical attendant or nurse contributed to the fatal result; occasionally the error in judgement amounted "to gross carelessness and ignorance". In one instance forceps delivery was followed by inversion of the uterus; the doctor and nurse left and the uterus was replaced later by the doctor's partner. In another instance no gloves were worn, but several vaginal examinations were made. Forceps were boiled in a saucepan, the boiling water was poured off, the instruments were placed in a wash-basin and were cooled by having unboiled water poured over them. And so the sorry tale goes. Comment is made on the few pathological examinations that are carried out in cases of sepsis. In only 34 of the 167 cases was pathological investigation made. "Many promising avenues of investigation are never explored at all." Though more research into puerperal sepsis should be carried out in public maternity hospitals, "in practically every case the staff and the equipment for the performance of such work is totally inadequate". Thirteen women whose deaths were classified as due to puerperal sepsis after complicated labour were delivered by Cæsarean section.

Deaths from eclampsia numbered 136; patients in the country numbered 76 and metropolitan patients 58. In 27 of the country cases and 27 of the metropolitan cases antenatal supervision was regarded as adequate. Apparently one of the main factors responsible for some of the deaths has been the apathy of the patients—even when they sought advice some of them would not follow it, nor would they return for further examination. Adequate antenatal supervision and treatment have their limitations in the prevention of eclampsia. "Fulminating eclampsia is an extremely fatal condition which, in the present state of our knowledge, is not apparently susceptible to very satisfactory control. The necessity for research into this problem is obvious and urgent."

The section about Cæsarean section does not altogether make pleasant reading. Sixty-seven deaths followed this operation. Some of the indications are described as of doubtful validity; others

as very indefinite. Apparently many of the instances of alleged disproportion, malpresentation and contracted pelvis did not offer sufficient indication for the procedure. For example, three *multiparæ* subjected to Cæsarean section had previously undergone normal labours. In some of the fourteen cases described as "contracted pelvis" the measurements "did not deviate markedly from normal and were apparently not verified by internal (and in at least one case not even by external) examination". The same opinion is expressed in regard to measurements of "disproportion" and "malpresentation". In 22 of the 67 fatal cases a trial of labour was allowed. Twenty-seven of the women were *primiparæ*. The conclusion seems justified that Cæsarean section is used with increasing frequency but with doubtful efficacy or justification.

In this short commentary on the report of Dr. Morris and Dr. Morgan no mention has been made of *ante partum* or *post partum* hæmorrhage, of abortions or embolism as causes of death. The points mentioned have seemed to be the most important. An investigation of this kind must be expected to reveal difficulties and also deficiencies. Of course, it leaves untouched the enormous question of maternal and infantile morbidity; at the same time it must be remembered that careful midwifery leaves healthy mothers and is much more likely to give a good start in life to the infant than are slipshod and careless methods. It is stated in this report that it does not seem possible at present to control about 40% of maternal mortality; the other 60% can be controlled. Whether these figures are correct matters not; what matters is that the mortality can be reduced. Of interest is the observation that the problem in Australia is not primarily one of social status. Among the 167 deaths from sepsis, for instance, only 38 occurred among women in poor and destitute circumstances. The remaining 129 patients were in fairly good circumstances or at least were not devoid of ordinary necessities. The Public Health Department of New South Wales is obviously alive to the seriousness of the situation. It should receive the hearty cooperation of all medical practitioners. One medical practitioner is stated to have refused to cooperate in any way with the department. He made no attempt to report a case of sepsis, and, when interviewed, insisted that the infection, though death was certified as due to septicæmia, was not of puerperal origin. No blood culture was done, though hæmolytic streptococci were found in the pus evacuated from the empyema with which the infection finally terminated. The patient was a *primipara* and died six weeks after delivery. Such an attitude is indefensible.

SEVENTH AUSTRALIAN CANCER CONFERENCE.

THE attention of readers is drawn to the programme of the seventh Australian Cancer Conference published in last week's issue. The conference, which is to be held in Melbourne from May 4 to 9, 1936, is open to all medical practitioners.

Abstracts from Current Medical Literature.

PHYSIOLOGY.

The Circulation Rate in Relation to Thyroid and Pituitary Metabolism.

DECHOLIN is the sodium salt of dehydrocholic acid, and it was first employed for determining the circulation time by Winternitz. It is injected into a vein in the antecubital fossa and gives an intensely bitter taste and smell on reaching the mouth and pharynx. If the determination is performed correctly, the end point is extremely sharp. The relationship between metabolism and the velocity of blood flow in thyroid disease has been studied by numerous investigators, all of whom have demonstrated that the velocity of blood flow is increased in hyperthyroidism and decreased in myxœdema. J. W. Macy, T. S. Clairborne and L. M. Hurxthal (*Journal of Clinical Investigation*, January, 1936) have made a study of the circulation rate to determine if there exists a change in circulation rate in conditions in which the metabolic rate is abnormal, but in which there appears to be no evidence of abnormal thyroid function. They state that it is well known that in acromegaly associated with chromophobe pituitary adenomata and hypopituitarism associated with chromophobe tumours the metabolic rate is definitely influenced; in the former it is increased and in the latter decreased. The clinical manifestations of myxœdema are usually lacking in hypopituitary cases with low metabolism as well as in many instances of hypometabolism of unknown cause. The authors predicted therefore that in these cases normal values for circulation time would be found. In their determinations they used two or three cubic centimetres of 20% decholin intravenously, but in some cases one cubic centimetre gave a definite response. The velocity of blood flow in their studies was taken as the time from the end of the injection of decholin to the time when the bitter taste appeared in the patient's mouth. They found that the measurement of the circulation rate by this method gave satisfactory results in normal cases. They found, as other workers have done, that the circulation rate was decreased in myxœdema, and they also found that it was normal in hypometabolism without myxœdema. They record evidence that the circulation rate is not affected in hypopituitary states in which the metabolism is abnormally low. They report several reactions and one death following the use of decholin in determining circulation rates. The death occurred in a middle-aged woman with intractable asthma, in whose case decholin was used in an attempt to alleviate the attack. Two cubic centimetres of

decholin were given rapidly intravenously, and as no bitter taste was noted the injection was continued slowly for its possible therapeutic effect. Scarcely more than two cubic centimetres had been given in addition when the patient was seized with a severe asthmatic state and died within three minutes, despite the intravenous and intracardiac administration of adrenaline and the use of oxygen and artificial respiration. Two other reactions occurred in "allergic" patients. Yet another patient who gave a history of hay fever had an attack of sneezing lasting eight minutes, until relieved by adrenaline. Two other patients, with no allergic history, had attacks of nausea and vomiting. The authors now make it a practice to avoid testing with decholin anyone with an allergic history.

Methylene Blue and Hæmoglobin Derivatives in Asphyxial Poisoning.

The suggestion that methylene blue should be used as an antidote in cyanide and carbon monoxide poisoning was first made by Matilda Moldenhauer Brooks (1932-1933), and it was first successfully used in both types of poisoning by Geiger (1932). Since that time many articles as to the mode of action of this dye in both types of poisoning have appeared in the literature. One theory is based upon the assumption that methylene blue and also nitrites produce methæmoglobin in the blood stream and that this subsequently unites with CN to form cyanmethæmoglobin. Because of this line of reasoning some authors have postulated that methylene blue should not be used in cases of carbon monoxide poisoning, since, by presumably changing oxy-hæmoglobin to methæmoglobin, it would act as synergist rather than as an aid to resuscitation. Matilda Moldenhauer Brooks (*American Journal of Physiology*, December, 1935) shows this hypothesis of the formation of methæmoglobin to be inconsistent with certain experimental observations made by her, and describes further studies showing why it is not properly applicable to the therapeutic use of methylene blue. This author considers that the question revolves mainly around the cyanide derivatives of hæmoglobin. Many investigators have failed to recognize the existence of two possible cyanide derivatives of hæmoglobin. This failure has arisen largely from neglect of two important factors that determine which of these two substances shall be formed in any given experiment. These factors are: (i) the presence in blood of substances other than pure oxyhæmoglobin, (ii) the concentrations and proportions in which the different reagents are used. It is not justifiable to use experiments with pure crystallized hæmoglobin derivatives or large excesses of reagents or prolonged methods involving conditions not found *in vivo* to explain results obtained in cyanide and carbon monoxide poisoning and

its therapy. Three series of experiments are described here. In one series experiments were performed with whole blood *in vivo*, 200 rats, 61 rabbits and one dog being used. A second series was performed with defibrinated blood *in vitro*, and in a third series, for purposes of comparison, crystallized hæmoglobin was used. It is shown that with the doses described in these experiments no methæmoglobin is formed in the blood stream or in defibrinated blood *in vitro* when methylene blue is used either with or without potassium cyanide. The presence of reducing agents, including glucose, in the blood stream prevents the formation of methæmoglobin. Sodium nitrite produces methæmoglobin when it is used in amounts sufficiently large to overcome the reducing capacity of the blood. Crystallized products of hæmoglobin give results differing from the above because of the absence of reducing substances. Cyanide attaches to hæmoglobin derivatives, forming either cyanhæmoglobin or cyanmethæmoglobin, depending upon the conditions of the experiment. In the blood stream, with the doses described in these experiments, only cyanhæmoglobin is formed. Since no methæmoglobin is formed by methylene blue in the blood stream with the doses used, it seems that the mode of action of methylene blue is as a catalyst rather than as a producer of methæmoglobin. Its use is again urged in both cyanide and carbon monoxide poisoning.

The Chemical Transmission of Vagal Effects to the Small Intestine.

SINCE the initial work of Loewi demonstrating the chemical transmission of the cardiac inhibitory effect of the vagus, similar transmissions have been described for other parasympathetic mechanisms as well as for conduction across sympathetic ganglia. A chemical substance, most likely, if not undoubtedly, acetylcholine, has been discovered after stimulation of parasympathetic nerves to the eye, the salivary glands, the tongue, the bladder and the stomach. To this list Henry Bunting, Walter S. Meek and C. A. Maaske (*American Journal of Physiology*, December, 1935) have added the vagus nerves to the small intestine. By the use of an intestinal loop in an intact animal as an indicator, they have shown that an acetylcholine-like substance arises in the splanchnic area during vagal stimulation. That this substance came in part at least from the small intestine was demonstrated by perfusion of this organ and tests on the perfusate. To the perfusate both the frog's heart and the eserinated leech responded in a manner typical for acetylcholine. The material could be demonstrated only when protected by eserine; its action was almost entirely abolished by atropine, and it disappeared on standing. It is therefore believed to be acetylcholine-like, and most likely acetylcholine itself.

BIOLOGICAL CHEMISTRY.

The Lead Content of Human Tissues and Excreta.

SIDNEY LIONEL TOMPSETT AND ALAN BRUCE ANDERSON (*Biochemical Journal*, August, 1935) have described an accurate method for the estimation of lead in human tissues, blood and excreta. After ashing, the lead is extracted with ether as a complex with sodium diethyldithiocarbamate. The lead in the ether extract, after destruction of the organic material, is determined colorimetrically with diphenylthiocarbazone. Lead was found in all tissues examined. The mean concentrations in milligrammes of lead per kilogram for adults were: liver 1.73, kidney 1.34, spleen 1.68, brain 0.5, rib 8.55, vertebra 7.09. Tissues from a patient known to have been exposed to lead showed higher figures, especially the rib, with 119 milligrammes per kilogram. In four fetuses of seven to eight months' gestation lead was found in all tissues examined. Figures for the excretion of lead in urine and faeces by normal laboratory workers and hospital patients are given. The analysis of 25 samples of blood obtained from three normal men and eighteen hospital patients (not suffering from lead poisoning) gave values of 40 to 70 γ per 100 millilitres, with a mean value of 55 γ . In a case of plumbism in a solder-maker, blood lead values as high as 380 γ per 100 millilitres are reported.

Carotenoids and the Visual Cycle.

GEORGE WALD (*Journal of General Physiology*, November, 1935) has shown that in the eye of the frog the pigment epithelium contains large stores of vitamin A and xanthophyll esters. Light liberates from the retinal visual purple a carotenoid, retinene, which is converted by a subsequent reaction to vitamin A. It is suggested that retinene and vitamin A are precursors of visual purple, which is formed by a combination of retinene with a colloidal component, probably a protein. Dark-adapted retinene (obtained from frogs kept in total darkness for sixteen hours), when extracted with benzene or carbon bisulphide, yield colourless extracts, since these solvents do not affect visual purple. Chloroform almost immediately decolorizes visual purple and the extract contains a greenish yellow pigment with carotenoid properties; this pigment has been named retinene. Light-adapted retinene (obtained from frogs exposed to bright daylight for half an hour) were colourless and yielded no retinene, but contained vitamin A. Isolated dark-adapted retinene were deep red in colour, owing to the presence of visual purple, and on exposure to light changed in colour to a bright orange, owing to visual yellow, and finally

became colourless. The first change was photochemical, but the second was independent of light and could be prevented by maintaining the temperature at 0° C. As the visual yellow fades under the action of light, retinene decreases in amount and vitamin A appears. It is considered that visual yellow may be retinene. In completely faded retinene retinene is entirely absent and vitamin A alone is found. This accounts for the presence of vitamin A in light-adapted retinene. In the isolated retina, vitamin A is formed by an irreversible series of reactions; in the living animal it appears as part of a continuous process in which visual purple is synthesized and decomposed repeatedly during light adaptation. Evidence is given which suggests that in visual purple retinene is bound to protein.

Food Value of Ethyl Alcohol.

H. H. MITCHELL (*Journal of Nutrition*, September, 1935) has reported results of experiments designed to determine whether the energy of ingested alcohol is dissipated as heat or whether all or part of it is available for physiological work, thus sparing fat and carbohydrate. Pairs of rats were fed on equal quantities of a good basal diet, and to one of each pair variable supplements of 95% ethyl alcohol were given. The observed effects of the alcohol were compared with the nutritive effects of sucrose, determined in an entirely similar manner. Alcohol supplements were added to the basal diet rather than to the drinking water, to minimize the narcotic effect, since simultaneous ingestion of food reduces the absorption rate of alcohol. Room temperature was maintained at or above 25.3° C. (80° F.) in an attempt to distinguish the true nutritive value of the supplements from their ability merely to supply body heat and thus spare other nutrients. To avoid evaporation of the alcohol when added to a solid basal ration, the alcohol was fed in milk from glass water fountains. The author concludes that the energy of ethyl alcohol is to a large extent available for physiological purposes. When added to a complete diet, such as mineralized milk, it induces more rapid growth and a greater retention of nitrogen as well as of fat. The new tissue traceable to the alcohol supplement possesses a greater content of fat than that produced on the basal diet alone. The alcohol supplement does not increase the excretion of metabolic products in the faeces, but probably does increase the digestibility of the basal diet. As compared with a similar supplement of sucrose, the energy of the alcohol supplement is only about three-quarters as available for physiological purposes, probably because of a greater specific dynamic effect. Its growth-promoting power is definitely less than that of sucrose, though the composition of the new tissues produced is similar to that of the gains

in weight produced by a sucrose supplement. Its effect on digestion is quite different from that of a sucrose supplement, the latter exerting no appreciable effect on digestibility of the basal diet, but inducing a greater excretion of metabolic products in the faeces, in accordance with its content of dry matter.

Replacement Therapy in Adrenal Insufficiency.

ARTHUR GROLLMAN AND WARFIELD M. FIROR (*Bulletin of the Johns Hopkins Hospital*, November, 1935), in experiments on the survival of adrenalectomized animals under different forms of replacement therapy, have demonstrated the impotence of the various marketed forms of adrenal preparations. Dried gland preparations and glycerine extracts for oral use were found to be completely devoid of activity. An extract designed for parenteral administration was found to possess a very low activity. These results are believed to account for the unsatisfactory results which have been observed clinically in adrenal cortex therapy. The normal human requirement of adrenal cortex hormone has been calculated from the results obtained on mice, rats, cats and dogs. The adrenal cortex hormone has been prepared in two forms suitable for oral therapy. When small doses are indicated, the hormone adsorbed on charcoal is recommended. For more intensive treatment the hormone is eluted from the charcoal and administered in solution, tablet or capsule form. No evidence has been obtained of any dangerous results from overdosage, but the use of impure preparations, either orally or parenterally, may give rise to serious toxic symptoms.

The Chemical Diagnosis of Pregnancy by Detection of Oestrin in Urine.

M. J. SCHMULOVITZ AND H. BOYD WYLIE (*Journal of Laboratory and Clinical Medicine*, November, 1935) have described a method for the detection and empirical quantitative measurement of theelin and theelol in urine. A twenty-four hour sample of urine is brought to pH 4 with hydrochloric acid and evaporated to 200 cubic centimetres to remove volatile phenols. Acidity is adjusted to pH 1 and the mixture is extracted with ether. The ether extract is washed with sodium carbonate solution to remove non-volatile phenols. After removal of the ether the residues are dissolved in alcohol and treated with a solution of diazotized p-nitroaniline, which reacts with theelin and theelol to give an orange to red colour. With the urine of males or non-pregnant females the final colour is yellow to pale brown, with no red tint. Pregnancy urine gives a dark orange to deep wine colour. The coloured solution is read in a colorimeter against a standard ferric chloride solution, and results are expressed in ferric chloride numbers.

British Medical Association News.

MEETING OF THE FEDERAL COUNCIL.

A MEETING of the Federal Council of the British Medical Association in Australia was held at British Medical Association House, 135, Macquarie Street, Sydney, on March 16, 1935, Sir HENRY NEWLAND, the President, in the chair.

Representatives.

The following representatives of the Branches were present:

New South Wales: Dr. J. Adam Dick, C.M.G., Dr. George Bell, O.B.E.

Queensland: Dr. D. Gifford Croll, C.B.E., Dr. T. A. Price.

South Australia: Sir Henry Newland, C.B.E., D.S.O., Dr. Bronte Smeaton.

Tasmania: Dr. S. Gibson, M.C., Dr. W. E. L. H. Crowther, D.S.O.

Victoria: Dr. J. Newman Morris, Dr. F. L. Davies.

Western Australia: Dr. J. J. Holland (as substitute for Dr. D. M. McWhae).

Dr. J. J. Holland acted as proxy for Dr. D. D. Paton.

Minutes.

The minutes of the previous meeting of the Federal Council, on September 7, 1935, which had been circulated amongst members, were taken as read and signed as correct.

Appointment of President and Vice-President.

The Secretary announced that only one nomination for the office of president had been received, that of Sir Henry Newland, proposed by Dr. D. M. McWhae and seconded by Dr. J. A. Dick. Sir Henry Newland thanked the members of the Council for his reelection.

At the last annual meeting of the Council a notice of motion was received from the Council of the Victorian Branch to the effect that the Federal Council should consider the advisability of limiting the tenure of the office of president so that it should not be held by one person continuously for a period exceeding three or five years. In accordance with the determination of the previous meeting the matter was again considered. Dr. Newman Morris spoke against the proposal and pointed out that continuity in the office was necessary. The same opinion was expressed by Dr. Bronte Smeaton. It was pointed out that if the suggestion of the Victorian Branch were adopted, circumstances might arise in which the chair would have to be filled by a member who had had little or no experience of the working of the Federal Council. It was also pointed out that it would be necessary to amend the Articles of Association in order to give effect to the proposal of the Victorian Branch and that such an alteration would mean that in order to comply with the *Companies Act* two meetings of the Federal Council would have to be held at an interval of not less than fourteen and not more than twenty-eight days.

Dr. F. L. Davies moved that there be no limitation to the period for which a member of the Council could hold office. The motion, which was seconded by Dr. Bronte Smeaton, was carried.

One nomination had been received for the office of Vice-President, that of Dr. J. Newman Morris; the nomination was signed by Dr. D. M. McWhae, Dr. G. Bell, Dr. J. Adam Dick and Dr. D. D. Paton. Dr. Morris was declared elected.

Appointment of Honorary Treasurer.

Dr. George Bell was appointed Honorary Treasurer on the nomination of Dr. J. Adam Dick.

The General Secretary: Leave of Absence.

An application was received from the General Secretary, Dr. J. G. Hunter, for leave of absence to enable him to visit England. In his application Dr. Hunter stated that he was going to England in April at the instance of the New South Wales Branch in order to make himself more fully acquainted with the working of the Association; he hoped to pay particular attention to the question of national insurance. Leave for six months was granted. It was resolved that in Dr. Hunter's absence Dr. George Bell should act as Honorary Secretary, and that if he were not available Dr. J. Adam Dick should act.

The Formation of an Executive Committee of the Federal Council.

At the meeting of the Federal Council twelve months previously the formation of an executive committee of the Federal Council in accordance with Article 13 was discussed; consideration was deferred at that time for twelve months. It was pointed out again that in accordance with the Articles of Association an executive committee would have to consist of six members; this number was thought to be too large. No action was taken.

Finance.

The financial statements and balance sheets for the six months ended December 31, 1935, of the Federal Council and of the Australasian Medical Congress (British Medical Association) Fund were presented by the Honorary Treasurer, Dr. George Bell, and received.

The Honorary Treasurer said that the *per capita* payment of two shillings per member had been made by the Branches for the year 1936; there would, he thought, be sufficient funds to meet the expenditure until the Federal Council met again.

It was noted in the Congress Fund account that interest had been paid on the New South Wales Branch debentures. It was also noted that the Federal Council had had to pay both Federal and State income tax and that State income tax had been demanded from the Congress Fund. It was held that the demand for income tax in respect of the Congress Fund was wrong in law, and it was decided to take legal advice about the matter.

International Congress of Physical Medicine.

A letter was received from the Victorian Branch forwarding an invitation that had been sent to it for the appointment of Australian representatives to the sixth International Congress of Physical Medicine, which was to be held at London on May 12 to 16, 1936. The appointment of delegates was left in the hands of the President and Secretary.

Conference on the Reduction of Working Hours in Australia.

The Secretary read correspondence that had passed between the Prime Minister of the Commonwealth and the President of the Federal Council regarding the appointment of a delegate to represent the medical profession at a conference on the reduction of working hours in Australia. The President reported that he had nominated Dr. Charles Badham, Medical Officer for Industrial Hygiene in the Department of the Director-General of Public Health of New South Wales. The President's action was approved.

Nutrition.

A letter was read from the Director-General of Health of the Commonwealth asking the Federal Council to nominate a representative to the Central Advisory Council that would act in connexion with an investigation into nutrition in the Commonwealth. It was resolved that Professor Henry Priestley, of the University of Sydney, should be asked to act.

Revision of the British Pharmacopœia.

A letter was read from the Director-General of Health of the Commonwealth asking the Federal Council to appoint a representative to sit on a committee for the revision of the British Pharmacopœia. The President reported that he had nominated Dr. B. L. Stanton, Lecturer on Therapeutics in the University of Melbourne. The nomination was approved.

Australasian Pharmaceutical Formulary.

The Secretary reported that he had received a communication from the Pharmaceutical Association of Australia and New Zealand regarding a reprinting of the Australasian Pharmaceutical Formulary of 1934 and asking for suggestions for emendations. The proposed reprint had been forwarded to the subcommittee of the Federal Council, Dr. J. Newman Morris and Dr. F. L. Davies. Dr. Newman Morris reported that the time allowed to the subcommittee was so short that nothing could be done.

Continental Anglo-American Medical Society.

The Secretary reported that he had received from the Continental Anglo-American Medical Society a list of its members. He explained that this society was intended to be of benefit to the travelling public and also to serve as a bond of union between Anglo-American practitioners on the Continent of Europe.

The Registration of the Federal Council at Canberra.

The Secretary reported that he had obtained advice from the Council's solicitors regarding registration of the Council at Canberra. The solicitors advised that before registration could be effected in the Federal Capital Territory it would be necessary for the Council to establish a branch in the Territory. No action was taken.

Public Hospital Appointments.

A communication was received from one of the Branches setting out the position in regard to some hospital appointments that had recently been made in the area of the Branch. The Branch Council thought that some injustice had been done to certain of its members by the manner in which applications had been called for; it sought the opinion of the Federal Council on the general way in which hospital positions should be advertised. After considerable discussion on the particular incident which had caused the Branch Council to write the letter, and after members from other Branches had described the methods used in their States, the Federal Council adopted a resolution to the effect that the calling of applications for appointment to a hospital staff was a matter of hospital administration. The Council thought that appointments should be open to all properly qualified medical practitioners, and it expressed the opinion that all advertisements should be clear as to the conditions of service.

Medical Officers' Relief Fund (Federal).

On behalf of the Trustees of the Medical Officers' Relief Fund (Federal), Dr. J. Adam Dick and Dr. George Bell presented an *interim* report for the half year ended December 31, 1935. At the end of 1935 fifteen loans were in existence. In one instance the Trustees had been compelled to take steps to enforce payment. On the advice of the Trustees it was resolved to write to all the Branches to ask them to let their members know of the existence of the fund and its objects. It was thought that in this way the fullest advantage might be taken of it by those who were entitled to assistance. It was also explained that under existing arrangements assistance was being given only to the dependants of medical officers who were incapacitated as a result of war service.

British Medical Scholarships and Grants.

The Secretary announced that an application had been received for an Ernest Hart or Walter Dixon Scholarship

from a member of one of the Australian Branches. The Secretary had communicated with the three referees named by the applicant.

Annual Subscription for Members in Australia.

A report of the conference held between the Federal Council and officials of the Parent Body on September 10, 1935, was laid on the table. A letter was also received from the Medical Secretary of the Parent Body stating that the Organization Committee had decided to grant to the Federal Council an annual sum of £1,000 in Australian currency for a period of three years as a contribution towards the expenses of that body and its secretariat. The letter was received. The members, who spoke in terms of greatest appreciation of the generosity of the Parent Body, discussed the manner in which the money should be expended. The view was held that the grant was definitely for the expenses of the Federal Council and that it could and should be used to expand and render more effective the Council's activities. One member pointed out that the Secretary of the Federal Council was being sent to England by the New South Wales Branch, where he would study such questions as national insurance. This member thought that when the Secretary returned to Australia it should be possible for arrangements to be made with the New South Wales Branch for the Secretary to visit the several Branches to help members to understand and formulate their opinion on this important subject. Another member referred to the request that had come from the Section of Medicine at the Hobart Congress for the investigation of rheumatism in Australia; he said that this was one direction in which the activities of the Federal Council might be extended. It was resolved that a copy of the letter from the Parent Body should be sent to each Branch and that the matter should be put on the agenda paper for the next meeting of the Council.

Australasian Medical Congress (British Medical Association).

The Fourth Session.

The Executive Committee of the fourth session of the Australasian Medical Congress (British Medical Association), held at Hobart, forwarded a copy of the final balance sheet, together with a cheque for £105, being surplus funds. The letter was received.

The Fifth Session.

The Secretary announced that the Council of the South Australian Branch had nominated Sir Henry Newland for the position of President of the fifth session, to be held at Adelaide. The nomination was approved on the motion of Dr. J. Adam Dick, seconded by Dr. J. Newman Morris.

On the nomination of the South Australian Branch, Dr. A. D. Lamphee and Dr. C. B. Sangster were appointed Joint Honorary Secretaries, and Dr. F. S. Poole Honorary Treasurer of the fifth session.

The recommendation of the South Australian Branch that the fifth session should be held on August 23 to 28, 1937, was adopted; and it was noted that the University of Adelaide had generously placed its buildings at the disposal of the Congress.

It was resolved that invitations to become patrons should be sent to the Governor-General of Australia, the Governor-General of New Zealand, the Governors of the several Australian States, the Governor of Fiji, the Chancellor of the University of Adelaide, the Lord Mayor of Adelaide and the Premier of South Australia.

Formation of Special Associations within the Profession.

At the conference held in September, 1935, between the Federal Council and officials of the Parent Body the formation of special associations within the profession was discussed. The Federal Council pointed out to the Home officials that, according to the rules of the Association,

any member of a Branch could join any section that was formed for the study of a special branch of medical science, and that largely as a result of this rule associations of medical practitioners had sprung up outside the ambit of the British Medical Association. The Federal Council asked that the rule might be altered to enable sections to control their membership. The Secretary announced that a communication had been received from the Parent Body to the effect that the Council of the Association had agreed to the suggestions of the Federal Council. Counsel's opinion had been obtained in England and it appeared that there would be no need to make any alterations in the Articles of Association of the Parent Body; alteration of the Articles of Association of the Federal Council would, however, be necessary. The Medical Secretary of the Parent Body had asked that the Federal Council would send definite proposals so that the Home Council might approve of them. It was resolved that a subcommittee should be appointed to draw up regulations for the formation of special groups or sections within the British Medical Association in Australia and that it should also draft the necessary alterations to the Articles of Association and By-Laws of the Federal Council. Dr. George Bell and Dr. J. Adam Dick were appointed as the subcommittee, with power to coopt other members. It was also resolved that the Branches should be informed of the steps taken.

The Secretary announced that a communication had been received from the South Australian Branch regarding a proposal for the formation of a Federal Association of Ophthalmology. It was resolved, in view of the action taken above, that the letter should be received.

A Therapeutic Investigation Bureau.

At the previous meeting of the Federal Council consideration was given to the suggested formation of a therapeutics investigation bureau. The matter at that time was in the hands of a subcommittee of the Federal Council consisting of Dr. J. Newman Morris and Dr. F. L. Davies; they were asked to continue their investigations and to make a further report. They now reported that no further developments had occurred. It had been suggested by the Pharmaceutical Association of Australasia that the matter might be referred to the Commonwealth Council for Scientific and Industrial Research. It was thought that a case could be made out for the formation of a section of that Council to develop the medical side of scientific research along the lines of the suggested investigational bureau. The suggestion was made that the Federal Council should express an opinion before any further steps were taken to form an independent organization. Members thought that the matter should be further investigated before any steps such as those indicated were taken, and it was decided to refer the matter again to the subcommittee, that its members might confer with the Pharmaceutical Association.

Broadcasting Health Talks.

Further consideration was given to the control of the broadcasting of health talks throughout the Commonwealth. At the previous meeting of the Federal Council it was reported that the Minister of Health, on being approached, had replied that it would be necessary for the Federal Council to give specific instances in which it was thought that harm had been done. The Council had replied that it was not prepared to do this. The Secretary reported that he had written to the Minister again and that the Minister had given the same reply as before. The Secretary also said that he had received a letter from the Victorian Branch of the Pharmaceutical Guild of Australia urging that efforts should be made to prevent harmful talks being given. After discussion it was resolved that the members of the Branches should be urged to be watchful and to report to their Branch councils instances in which misleading information was given and in which harm resulted. The matter would be taken up again with the Minister at a later date.

Research Work at Canberra.

At the meeting of the Federal Council held twelve months previously addresses were given to the Federal Council at the request of Dr. Earle Page, at that time Acting Prime Minister of the Commonwealth, by Dr. J. H. L. Cumpston and Sir Colin MacKenzie about research work that it was thought should be undertaken at Canberra. The Federal Council, after hearing these addresses, wrote to Dr. Page suggesting that the Federal Government should take steps to establish a medical research council in accordance with the recommendations of the Royal Commission on Health published in 1925. It was reported at the last meeting of the Federal Council that Dr. Page had not replied; and a further letter was written to him. The Secretary reported that he had had a reply to the last letter, stating that the matter was still under consideration.

The Australian Army Medical Corps.

Reference was again made to the suggestion of the Federal Council that an officer of the Australian Army Medical Corps should visit England in his military capacity in order that he might study the latest developments connected with army medical service. After the last meeting of the Federal Council another letter was written to the Minister for Defence. The Secretary reported that the Minister had replied that the matter would be kept favourably in mind. The correspondence was received.

Reference was also made to the question of the treatment of members of the permanent military forces in public hospitals. The Secretary reported that a letter had been received from the Department, in which it was pointed out, *inter alia*, that in certain circumstances in which operation was performed on members of the permanent military forces the question of payment of a fee was one that should be settled between the patient and the medical attendant. The Department held that such cases were few and far between. The opinion was expressed by members of the Federal Council that the letter of the Department was at variance with the facts and the regulations; it was the few cases in which medical practitioners were interested. It was decided that a further letter should be written to the Department and that attention should be drawn to the fact that the procedure carried out appeared to be contrary to the regulations.

The Australian Naval Medical Services.

The conditions of service of medical officers in the Royal Australian Navy were again discussed. Reference was made to the view expressed by the Department that the short service scheme for medical officers was attractive—that a medical officer on retiring after three years' service received a gratuity of £400, and after five years' service £1,000. The Department thought that since more medical officers would apply for short service, those who remained permanently in the service would have greater chances of attaining higher rank. Dissatisfaction was expressed at the conditions prevailing at the naval base at Flinders Island, particularly that no officer with the rank of captain was in charge of this station. After discussion it was decided that the Department should be informed that the Federal Council was still dissatisfied with the present arrangements.

The Australian Cancer Conference.

A request was received from the Director-General of Health of the Commonwealth that Dr. J. Newman Morris should again be appointed representative of the Federal Council to the seventh Australian Cancer Conference, to be held at Melbourne on May 4 to 8, 1936. He desired that the closest cooperation might continue to be manifest between the British Medical Association and the conference. Dr. Morris was appointed.

Reference was made to the agenda for the conference. One item for discussion was the question of establishing units in country centres for giving assistance to medical practitioners in the diagnosis of cancer. Dr. Newman Morris explained that the Victorian Branch had selected

three of its country members to take part in this discussion. Dr. Morris thought that the discussion might possibly result in the adoption of a standard procedure.

Newspaper Publicity at the 103rd Annual Meeting of the British Medical Association.

A letter was read from the Royal Australasian College of Surgeons, in which the College drew attention to the newspaper publicity that had occurred in connexion with the 103rd annual meeting of the British Medical Association at Melbourne in September, 1935. The letter was accompanied by a sheaf of newspaper cuttings. The Royal Australasian College of Surgeons wished to know whether the Federal Council approved of this publicity. Members explained the steps that had been taken to prevent publicity; the arrangements had broken down. It was resolved to write to the College to the effect that the Federal Council did not approve of the publicity and regretted that it had occurred.

Manufacture of Catgut.

A letter was received from the New South Wales Branch stating that a communication had been received from the Standards Association requesting that the Federal Council should ask the Federal Government to introduce legislation dealing with the manufacture of catgut. On discussion it was decided that this was a matter for the individual States. It was decided that the Branches should be asked to bring the subject before the health departments in the several States.

National Insurance.

A letter was read from the Queensland Branch endorsing the action of its delegates in dissenting from the decision of the Federal Council at its last meeting on the question of national insurance. The letter was received.

The Australian Medical Directory.

The Secretary stated that he had received a letter from Mr. E. G. Knox regarding an edition of his "Medical Directory" for 1936 and asking for the cooperation of the Federal Council. It was resolved that the Editor of THE MEDICAL JOURNAL OF AUSTRALIA should be asked to cooperate with Mr. Knox in the second edition as he had done in the first.

Time and Place of the Next Meeting.

The determination of the time and place of the next meeting was left in the hands of the President.

Votes of Thanks.

A vote of thanks was accorded to the Council of the New South Wales Branch for having provided accommodation for the meeting and for its hospitality.

NOTICE.

A MEETING of the Section of Hygiene and Preventive Medicine of the New South Wales Branch of the British Medical Association will be held in the William Henry Crago Council Chamber, British Medical Association House, 135, Macquarie Street, Sydney, on April 7, 1936. No meetings of this section have been held for some years, and in view of the many preventive medicine problems at present exercising the minds of medical practitioners, an effort is to be made to resuscitate the section. All members of the Branch are invited to attend.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected members of the Victorian Branch of the British Medical Association:

Langmore, Leonard, M.B., B.S., 1935 (Univ. Melbourne), "Athol", Berwick.

Hayes, Robert Rene Constable, M.B., B.S., 1933 (Univ. Melbourne), c.o. G. Constable Hayes, F.R.C.S. (England), The Greenway, Shurdington, Cheltenham, England.

Jackson, Alan Vaughan, M.B., B.S., 1935 (Univ. Melbourne), Royal Melbourne Hospital, Lonsdale Street, Melbourne, C.1.

Sunderland, Sydney, M.B., B.S., 1935 (Univ. Melbourne), Department of Anatomy, University of Melbourne, Carlton, N.3.

Vorrath, Travis Wilhelm, M.B., B.S., 1935 (Univ. Melbourne), Royal Melbourne Hospital, Lonsdale Street, Melbourne, C.1.

Obituary.

WILLIAM HENRY CRAGO.

THOSE who do most for medicine and for the whole body of medical practitioners are not always in the public eye, nor do they receive the recognition that by right is theirs. Some of the most effective workers are unobtrusive, they do their good works almost by stealth, and only those who are in close association with them behind the scenes know the true value of their deeds and the extent of their devotion and self-sacrifice. The younger graduates in medicine in New South Wales knew William Henry Crago, the quiet, almost diffident Honorary Treasurer who presented his balance sheet at annual meetings of the Branch. They certainly saw that he was treated with deference, and they could not do other than appreciate the long years of service that he had given to the Association; but it is doubtful whether they knew how much they really owed to him.

William Henry Crago was born on March 12, 1851, at Liskeard, in the County of Cornwall, England. He came to Australia with his parents at the age of fourteen. He became interested in pharmacy, which he took up as a profession, and became associated closely with the late Dr. Robert Bowker.

At the age of about twenty-six he went to England with the object of studying medicine. After the usual period of training, mainly at Middlesex Hospital, he obtained his diplomas of M.R.C.S. (England) and L.R.C.P. (London) in the year 1883. During the course of his study he won several scholarships and prizes, among his most valued awards being the John Murray Scholarship and Medal (1883). Shortly after obtaining his diplomas he returned to New South Wales and at once commenced practice in William Street, Sydney. He remained there for some years, during which time he built up a large practice; he then moved to College Street and later to Macquarie Street, where he practised until about ten years prior to his death, when he virtually retired from practice. He was at one time honorary surgeon at the Women's Hospital, Paddington, and at Sydney Hospital.

Shortly after commencing practice he became associated with Sir Alexander MacCormick and Dr. E. T. Thring. With them and others he helped to establish "The Terraces", a private hospital now known as "The Scottish Hospital". Surgery claimed his interest and for some years he devoted himself entirely to its practice. Those who knew him best knew that the welfare of the patient was always his first care; he was often known to pass on surgical operations to others whom he thought more skilful than himself, and this when those associated with him would have judged him more than equal to the task.

Crago's chief care was the New South Wales Branch of the British Medical Association. That he was Honorary Treasurer for over forty years was merely one of the ways in which he devoted himself to its service. Through the New South Wales Branch he served all the Branches, for he was one of those who helped to create THE MEDICAL

JOURNAL OF AUSTRALIA. As Dr. Lipscomb has stated in his tribute, Crago was one of those who bought *The Australasian Medical Gazette* from its lay owner and presented it to the Branch. He was manager of the gazette until it went out of existence in 1914. At the recent meeting of the Directors of the Australasian Medical Publishing Company, Limited, Dr. R. H. Fetherston recalled the determination and steadfastness of purpose with which Crago worked for the establishment of a single medical journal for the Australian Branches of the British Medical Association. In those days the Branches were not of the same mind as they are today. Prejudices had to be broken down and vested interests had to be sunk. There were men of vision in all the States, and Crago was one of those who did most to promote union. When the Australasian Medical Publishing Company, Limited, came into being he was naturally chosen as its first Chairman of Directors. During the early years the affairs of this journal were in a hazardous position by reason of the Great War—the cost of paper and of printing was high and finance was difficult. That the storm was weathered was in no small degree due to Crago's determination. He retired from the Board of Directors in 1924, having earned the gratitude and appreciation of his fellow directors. At the recent meeting of the Directors of the Australasian Medical Publishing Company, Limited, the following resolution was adopted:

The members of the Board learned with sincere regret of the death of Dr. William Henry Crago on February 6, 1936. They place on record their great appreciation of his services to the Company. He was one of a band of those whose vision and whose untiring efforts resulted in the establishment of *THE MEDICAL JOURNAL OF AUSTRALIA* as a single journal to serve the several Branches of the British Medical Association in the Commonwealth. He was the first Chairman of Directors of the Australasian Medical Publishing Company, Limited, taking office in 1913. He did not spare himself in striving for the success of the Company and much of its progress was due to his untiring effort. When he retired from the Board in 1923, his wisdom and caution were missed by his fellow Directors. They wish to offer to the members of his family their heartfelt sympathy.

Crago was President of the New South Wales Branch in 1894. For this year he relinquished the duties of Honorary Treasurer; he took them up again in 1895 and held the office until 1931. As Honorary Treasurer he had a great deal to do with the erection of the B.M.A. Building in Elizabeth Street, and the success of the venture was in no small measure due to him. Later the property was resumed by the City Council and the present building in Macquarie Street was erected, Crago again taking an active part in the finance of the scheme. The Branch recognized the debt that it owed to Crago and showed its appreciation by electing him a Vice-President, an honour that had not previously been granted to a member of the Branch. In 1927 the Branch Council prevailed on him to sit to Mr. John Longstaff, R.A., to have his portrait painted. This portrait was presented to him at the annual meeting of the Branch on March 31, 1927. It now hangs on the wall of the council chamber that bears his name. The picture of him printed as a supplement to this issue is taken from that portrait. At a meeting of the Branch Council held on March 24, 1936, in the William Henry Crago Council Chamber the following resolution was adopted:

That a resolution be placed in the Minute Book expressing deep regret at the death of Dr. W. H. Crago and recording the Council's sincere appreciation of the great services he rendered to the Association.

In 1929 the gold medal of the British Medical Association was presented to him at the inaugural meeting of the third session of the Australasian Medical Congress

(British Medical Association). This medal has been awarded to only two other members in Australia, the late William Thornborough Hayward, of Adelaide, and the late Robert Henry Todd, of Sydney. In making the presentation, Dr. G. H. Abbott, the President of the Congress, said that the history of the New South Wales Branch appeared to be practically the history of Crago's association with it.

Crago held other positions in medical organizations. He was for many years Honorary Auditor of the Federal Committee of the British Medical Association in Australia, he was trustee of the New South Wales Medical Union, and he was also trustee of the Medical Officers' Relief Fund. He was interested in all charitable organizations and gave to many his interest and support. He was practically the founder of The Home of Peace for the Dying, Marrickville, and was closely associated with the foundation of the Church of England Homes. For many years he was on the council of the Institution for the Deaf, Dumb and Blind. In the religious world he took his part. He was for many years churchwarden of Saint Peter's Church, East Sydney, and later held the same position at Saint Phillip's Church of England, Church Hill, where he was also a trustee. He was a lay canon of Saint Andrew's Cathedral.

The memory of Crago's life of service, the knowledge that he accomplished much, and the high regard in which he was held by his colleagues will be a source of satisfaction and comfort to his relatives.

Dr. Ralph Worrall writes:

As one who worked with the late Dr. W. H. Crago in the affairs of the New South Wales Branch of the British Medical Association for twenty years and was his neighbour and friend for longer than that, I should like to witness to his devoted service to and self-sacrificing efforts on behalf of the medical profession. In my day no one else has done so much for the common good and general interest. In the best sense of the term we have had a nobleman amongst us, one who loved himself last, placed humanity first and the New South Wales Branch second. We shall not easily find such another.

Dr. T. W. Lipscomb, Chairman of Directors of the Australasian Medical Publishing Company, Limited, writes:

By the passing of William Henry Crago, New South Wales, and indeed the whole of Australia, has lost one of the stalwarts of the medical profession.

The amount of work that he did as Manager of *The Australasian Medical Gazette* from 1895 to 1914 is well known. The gazette was the property of the New South Wales Branch, having been bought from a proprietary lay concern at a cost of over a thousand pounds. The work and enthusiasm of four men saved the gazette and made it a valuable medical publication and an asset to the Branch. Of these four, Rennie, Fortescue and Crago have now passed on, but fortunately the fourth (R.W.) is still with us and in harness in Macquarie Street.

At a later stage Robert Henry Todd came into the picture, and it was largely owing to the influence of visits by Crago, Rennie and Todd that the interest of the Victorian Branch of the British Medical Association was stimulated and that the foundation was laid for a Federal Committee of the Branches in Australia, a committee that did valuable work for the profession and that took over the management of congresses on a British Medical Association basis. The Federal Committee has, we all know, become the Federal Council.

The Committee having been formed, Crago and Todd set to work with members of the Victorian Branch to devise a scheme for a Federal medical journal; as a consequence the Victorian Branch handed over its valuable asset, *The Australian Medical Journal*, and the New South Wales Branch handed over *The Australasian Medical Gazette*, both without demanding any payment.

The Australasian Medical Publishing Company, Limited, was formed in 1913 with no share capital, but with money raised by debentures from medical practitioners in the several States, and this company produced the first issue

of THE MEDICAL JOURNAL OF AUSTRALIA on July 4, 1914. Of this company Crago was the first Chairman of Directors; and he occupied that position until 1924, Todd being the first Secretary.

How well the foundations were laid by Crago as Chairman and by his co-directors and by Todd is now in evidence, for in spite of its earlier financial vicissitudes the company owns its own completely equipped printing house; its only debt is the capital debt of the debentures held by members of the profession in Australia, on which interest is paid regularly.

One of Crago's ideals has come true, for the company is thus owned by, and exists for, the profession; any profits made over and above debenture interest will eventually go to the Branches, and the first object of the British Medical Association Branches is as follows:

The promotion, either in conjunction with the British Medical Association or other similar body or bodies or otherwise, of medical and the allied sciences and the maintenance of the honour and the interests of the medical profession.

The history of this company and its subsequent development show only one phase of the many activities in the life of William Henry Crago. A fitting epitaph to his memory is that "he lived for the people".

The memory of that quiet, retiring, godly man is ineffaceable to me, for I sat with him for many years on the Council of the New South Wales Branch and its committees. I remember him with his honorary treasure-papers and books of account, accurate always to the last penny and all in his own handwriting, and again when he occupied a similar position at the Australasian Medical Congress in Sydney in 1929.

Sir Alexander MacCormick writes:

It was with deep regret that I learned by cable of the death of Dr. Crago, as he and I were friends for half a century.

Dr. Crago received his medical education at Middlesex Hospital, and he was a contemporary of Bland Sutton, of whom he often spoke with great regard. My first introduction to him came through the late Dr. Chambers, who wished me to join Dr. Knaggs, Dr. Crago and himself in running St. Kilda Private Hospital. Before that time there were no private hospitals in Sydney, and in the case of a patient requiring a very serious operation one had to have recourse to a private ward in the Prince Alfred Hospital and at the same time forgo all right to fees for attendance.

For many years Dr. Crago assisted me with operations in my private practice; he was a splendid assistant and an excellent surgeon, who always gave of his best. He was a loyal colleague and friend; he was always kind and considerate to others, and in all his ways and doings he upheld the highest ideals of a noble profession.

During the last twenty years Dr. Crago devoted much of his time to the working of the New South Wales Branch of the British Medical Association, and I understand that he was instrumental in inaugurating the handsome building in Macquarie Street for the British Medical Association. He was a man of deep religious convictions and was always ready to turn his energy and ability to the assistance of any good work. He was a true Christian in every sense of the word. His single-minded devotion to his work and his unvarying courtesy made him a general favourite, and he is mourned by a large circle of friends.

Dr. E. T. Thring writes:

The retirement from active work of Dr. W. H. Crago was a very definite loss not only to the community at large, but more especially to the profession of medicine in Australia. As a man he was kindly and sympathetic, always ready to help where help or guidance was needed. He was a good man, and his attitude towards his fellow men might be tersely expressed as: "do to the other fellow as you would like him to do to you under similar

conditions". He gave his time and organizing ability unsparingly for the benefit of the medical profession as a whole, and thus acted as a benefactor to the community generally. It is in a great measure due to him that the New South Wales Branch of the British Medical Association was awakened from the lethargic condition into which it drifted at the end of the nineteenth century and the early years of nineteen hundred. I myself valued the privilege of his assistance and advice in the days when abdominal surgery was more or less in its infancy, and his help and wide general experience were of the greatest value in breaking new ground.

I am sure that all the older practitioners with whom he came in contact feel that a very definite influence for good has been taken from amongst us.

Dr. W. N. Robertson writes:

It is five and twenty years since my first contact with my dear old friend, Dr. Crago, and my esteem and affection for him have steadily grown as the years have passed by.

The New South Wales Branch was exceptionally favoured in the possession of two such altruists as Todd and Crago, and when the federation of the Branches took place these two wonderful fellows extended their energies to include the purposes of the Federal Committee and THE MEDICAL JOURNAL OF AUSTRALIA.

Crago was hard to convince at times, but once you satisfied him that a course was the right one, he would unstintingly give of his best to further the conclusions adopted.

When THE MEDICAL JOURNAL OF AUSTRALIA was started Crago was opposed to a full-time editor, and it took a long time to bring him round, but he was always loyal to the findings of the majority of the Board and never ceased to help to the utmost the efforts to make the journal a success. His long experience as Treasurer of the Branch had perhaps taught him more caution than was possessed by some of his younger and more optimistic fellows, and I am sure his steady influence was of great value to us during the difficult and stormy times through which the journal passed in its early days, and his assistance as Chairman of Directors for some years was invaluable. One does not forget that he was one of those who generously backed a very shaky-looking overdraft at the bank during those trying days, in spite of his rather pessimistic view of the undertaking.

My happiest recollections of Crago are, of course, the personal ones. Those of us who came from the other States to the meetings of the Federal Committee and journal directors always looked forward to forgoingathering with him, and his hospitality and our battles at billiards with him somehow became bright spots in our often busy visits.

Crago leaves a fragrant memory as a loyal colleague and a friend who earned the esteem and warm affection of us all.

Correspondence.

PSYCHOANALYSIS.

SIR: As one who knows a little both of psychoanalysis and of the excellent work of Dr. Coupland Winn in this branch of medicine, I feel impelled to make some reply to his critics in the current issue of our journal. I would like to point out that the views expressed by Dr. Winn are those of Freud and not those of Dr. Winn, and that these views, supported as they are by the evidence of innumerable analyses, have found acceptance all over the world.

The argument that charlatans discredit the practice of psychoanalysis is quite true; it is also true of many other branches of the healing art; unqualified skin specialists, cancer curers and spectacle sellers abound and

wax fat, but their existence does not affect the *bona fides* of dermatologists, surgeons and oculists.

In the very same issue of the journal (THE MEDICAL JOURNAL OF AUSTRALIA, March 14, 1936) there is a paragraph in Dr. Nye's excellent article on recent progress in medicine, extolling the labours of Freud and his followers, and particularly mentioning the importance of environment, especially in children.

Yours, etc.,
"M.B."

March 14, 1936.

SIR: The letter from Dr. McGeorge in your journal of March 14, 1936, on the above-named subject is of great interest to psychologists.

Dr. McGeorge states that Freud's ardent disciples are rushing headlong towards oblivion. Freud's work was commenced in the last century, so it has taken them forty years to reach oblivion, and in the meantime interest in psychoanalysis appears to be increasing.

In his third paragraph Dr. McGeorge accuses the Freudians of explaining a child's timidity as the expression of a repressed sadistic impulse. This method of taking small isolated portions of a theory and subjecting them to criticism can be applied to any scientific work, and no subject, except mathematics, would stand the test.

His fourth paragraph is only abuse of his opponents and does not require an answer.

When Dr. McGeorge states that: "I would hate to think that the minds of those whom I respect and esteem are the turbulent cesspools of lasciviousness that the psychoanalysts would have us believe" he is stating an interesting psychological fact about his own likes and dislikes, but is in no way putting forward a scientific argument. Dr. McGeorge, I presume, would "hate to think" that one of his esteemed and respected friends had, say, a carcinoma of the liver, but the state of Dr. McGeorge's mind would hardly cause a surgeon to alter his diagnosis of the said carcinoma.

Freud's work undoubtedly has many blemishes; it will be altered and modified as time goes on; but Freud has shed a light on the psychoses and psychoneuroses which has been the greatest advance in modern psychology, and his basic principles will in the future always have to be considered by alienists and psychologists.

Yours, etc.,
JOHN K. ADEY, M.B., B.S.

Receiving House,
Melbourne, N.Z.
(Undated.)

CASE OF POLYCYTHÆMIA BECOMING LYMPHATIC LEUCHEMIA.

SIR: In reference to my report in the journal of the above occurrence, I beg to state that Professor Naegeli, the Swiss hematologist, to whom I sent films of the case, writes saying that no such case has been previously recorded.

In regard to the treatment of polycythæmia, the following summary of Continental opinion may be useful to some of your readers.

In phenylhydrazin we have a remedy which makes it possible to get permanent relief, always provided that the dosage is regulated by the red cell count.

Treatment begins with 0.05 to 0.1 gramme, according to body weight. This is given on four consecutive days. If no reduction of the red cells results, the dose is increased by 0.05 gramme, again given on four consecutive days. A third increase by 0.05 gramme may be necessary; but the dose given should never be more than 0.25 gramme. When the amount given is 3.0 grammes and no result obtained, treatment must be interrupted for some time, to be started again later on.

The treatment causes a leucocytosis—may rise to 30,000 or even 60,000. This leucocytosis is the guide in regard to the dosage. The effective dose is indicated when the leucocytosis becomes well marked.

The very regular estimation of the red cell and white cell count is essential.

Long-continued treatment may be necessary. In that case one to three weekly doses are prescribed, but each not more than 0.1 to 0.2 gramme.

Everything depends on the correct dosage; otherwise fatty degeneration of the liver and renal complications will be the result.

Yours, etc.,
ALFRED E. FINCKH.

227, Macquarie Street,
Sydney,
March 17, 1936.

HISTIDINE TREATMENT OF PEPTIC ULCER.

SIR: The following brief notes may be of interest to your correspondent "Sufferer".

A.H., aged fifty-six years, suffering from "indigestion" for fifteen years and with an X ray diagnosis of duodenal ulcer, completed his course of twenty-one injections of "Larostidin" on February 24. He has added eight pounds to his weight, eats anything without discomfort, and says he feels a new man.

S.S., aged fifty-two years, had forgotten the onset of his dyspepsia but remembered a hæmatemesis five years ago. On February 14 he came in with a jam-tin full of blood he had vomited. After three days in bed he commenced his course, was on full diet in one week, and for the last two weeks has been on heavy work, feeling better than he has for years.

A.J., aged forty-five years, complained of gradual onset of discomfort after food four months ago. He was relieved by diet and alkaline powder, but quickly became nauseated by milk and "slops". He finished his course yesterday, and, except for some discomfort after eating sausages of doubtful ancestry, has been free of pain. He dined on roast beef and vegetables, with apple pie to follow, at the end of the first week.

The improvement in these three cases, both physically and mentally, has been remarkable. My thanks are due to Dr. D. A. McKenzie, who suggested this line of treatment in the first of these cases.

Yours, etc.,
H. D. ASHTON.

Tara,
Queensland,
March 17, 1936.

"THE CLINICIAN AND THE PATHOLOGIST"; "A CASE OF AGRANULOCYTOSIS".

SIR: Your leader of February 22, "The Clinician and the Pathologist", and Dr. Walker and Dr. Green's report of February 15 of "A Case of Agranulocytosis" tempt me to pen the following.

You state that the clinician will be wise to remember that, whatever the pathologist may advise, the clinician must take the responsibility in the making of the diagnosis.

Dr. Walker and Dr. Green state that "the alarming leucocyte count pointed to a diagnosis of agranulocytosis". They speak of their case as representing "the fully developed agranulocytic syndrome".

In the consideration of agranulocytosis one has to keep in mind that there are two types: agranulocytosis *Schultz, sui generis*, is the one; symptomatic agranulocytosis is the other. The blood picture in both is identical; or, to be more precise, the blood picture of the symptomatic form may be identical with that of the disease *sui generis*.

No pathologist, without knowing the clinical features of the case, dare make the diagnosis. Yet in this case, with a report of 2.6 million red cells, the diagnosis would point to the symptomatic type of the disease.

Agranulocytosis, *sui generis*, Schultz, demands the following clinical features:

1. A high temperature from the beginning.
2. An ulcerative condition of the mouth.
3. Subicterus.
4. Acute bone marrow affection.
5. No disturbance of the erythroblastic system.
6. No sepsis, no suppuration.

Agranulocytosis may occur, as a symptom, in sepsis, in lung conditions, in diphtheria, in septic cholecystitis *et cetera*.

Yours, etc.,

ALFRED E. FINCKH.

The Sydney Clinical Research Laboratories,
227, Macquarie Street,
Sydney,
March 23, 1936.

Post-Graduate Work.

POST-GRADUATE LECTURES ON UTERINE PROLAPSE.

THE New South Wales Post-Graduate Committee in Medicine announces that a lecture entitled "Prolapse: Its Management and Treatment" will be given in the Robert H. Todd Assembly Hall, 135, Macquarie Street, Sydney, at 8.30 p.m. on Tuesday, May 26, 1936, by Dr. T. G. Stevens, Consulting Surgeon, St. Mary's Hospital, the Hospital for Women, Soho Square, and the Queen Charlotte's Lying-in Hospital, London.

Dr. Stevens is author of the text-book "Diseases of Women" and one of the contributors to "Midwifery and Diseases of Women" by ten teachers.

The fee for admission will be five shillings. Admission will be by ticket only. Tickets may be obtained at the door or by application to the Secretary, New South Wales Post-Graduate Committee in Medicine, The University of Sydney, Sydney.

Medical Prizes.

THE FRANCIS AMORY SEPTENNIAL PRIZE OF THE AMERICAN ACADEMY OF ARTS AND SCIENCES.

In compliance with the requirements of a gift under the will of the late Francis Amory, of Beverly, Massachusetts, the American Academy of Arts and Sciences announces the offer of a septennial prize for outstanding work with reference to the alleviation or cure of diseases affecting the human genital organs, to be known as the Francis Amory Septennial Prize. The gift provides a fund, the income of which may be awarded for conspicuously meritorious contributions to the field of knowledge "during the said septennial period next preceding any award thereof, through experiment, study or otherwise . . . in the diseases of the human sexual generative organs in general". The prize may be awarded to any individual or individuals for work of "extraordinary or exceptional merit" in this field.

In case there is work of a quality to warrant it, the first award will be made in 1940. The total amount of the award will exceed ten thousand dollars, and may be given in one or more awards. It rests solely within the discretion of the Academy whether an award shall be made at the end of any given seven-year period, and also whether on any occasion the prize shall be awarded to more than a single individual.

While there will be no formal nominations, and no formal essays or treatises will be required, the Committee invites suggestions, which should be made to the Amory Fund Committee, care of the American Academy of Arts and Sciences, 28, Newbury Street, Boston, Massachusetts, United States of America.

Congresses.

THE INTERNATIONAL UNION AGAINST TUBERCULOSIS.

THE tenth Conference of the International Union Against Tuberculosis will be held at Lisbon on September 7 to 10, 1936, under the chairmanship of Professor Lopo de Carvalho. The discussions will be devoted to three main subjects: a biological subject, "Radiological Aspects of the Pulmonary Hilum and their Interpretation"; a clinical subject, "Primary Tuberculous Infection in the Adolescent and the Adult"; a social subject, "The Open Case of Tuberculosis in Relation to Family and Domestic Associates".

Members of the International Union Against Tuberculosis may take part in the conference without the payment of any fee. Non-members of the Union may become members of the conference by the payment of 200 escudos (approximately 125 French francs). Further information may be obtained on application to the International Union Against Tuberculosis, 66, Boulevard Saint-Michel, Paris (6°).

Hospitals.

THE BUCKLAND CONVALESCENT MENTAL HOSPITAL, SPRINGWOOD.

ON Saturday, January 25, 1936, the Honourable B. S. B. Stevens, M.L.A., Premier of New South Wales, opened the Buckland Convalescent Mental Hospital, Springwood. This hospital has been founded as a result of a gift by Sir Thomas Buckland of a sum of £100,000 for its erection, equipment and endowment. It is intended as a hospital for female patients suffering from mental or nervous disease, who are in a convalescent stage and who require a comfortable hospital in which to recuperate. The hospital is controlled by a committee of management of which Sir Thomas Buckland is chairman; Dr. C. A. Hogg, formerly Inspector-General of Mental Hospitals, is a member of the committee. The hospital has two wings and it is the intention of the Committee of Management to provide accommodation in one wing for patients other than those suffering from mental conditions. Medical practitioners have been invited to inspect the institution.

Proceedings of the Australian Medical Boards.

QUEENSLAND.

THE undermentioned have been registered, pursuant to the provisions of *The Medical Acts, 1925 to 1935*, of Queensland, as duly qualified medical practitioners:

Brent, Richard Hillier, M.B., B.S., 1933 (Univ. Sydney), Taroom.

Bryan, Sidney William, M.B., B.S., 1933 (Univ. Sydney), Isisford.

Burne, Alfred Rainald Keith, M.B., Ch.M., 1926 (Univ. Sydney), Wynnum.
 Inglis, Alexander, M.B., B.S., 1929 (Univ. Sydney), Brisbane.
 Kelly, Thomas Francis, L.R.C.P. and S. (Edinburgh), L.R.F.P.S. (Glasgow), 1924, Brisbane.
 Norrie, Harold Francis Joseph, M.B., Ch.M., 1913 (Univ. Sydney), Sydney.
 Skyring, Doris Una, M.B., B.S., 1935 (Univ. Sydney), Rockhampton.

Corrigendum.

An error has appeared in the paper by Dr. W. S. Dawson on "Progress in Psychiatry", published in the issue of March 28, 1936. On page 425, in the seventh line of the second column, the figure 75% should be 7.5%. "... of 190 treated paralytics, 7.5% had been discharged able to earn a living."

Diary for the Month.

APR. 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.
 APR. 7.—Tasmanian Branch, B.M.A.: Council.
 APR. 14.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 APR. 14.—Tasmanian Branch, B.M.A.: Branch.
 APR. 15.—Western Australian Branch, B.M.A.: Branch.
 APR. 21.—New South Wales Branch, B.M.A.: Ethics Committee.
 APR. 21.—Tasmanian Branch, B.M.A.: Council.
 APR. 22.—Victorian Branch, B.M.A.: Council.
 APR. 23.—New South Wales Branch, B.M.A.: Clinical Meeting.
 APR. 24.—Queensland Branch, B.M.A.: Council.
 APR. 28.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 APR. 30.—South Australian Branch, B.M.A.: Branch.
 APR. 30.—New South Wales Branch, B.M.A.: Branch.
 MAY 1.—Queensland Branch, B.M.A.: Branch.
 MAY 4.—New South Wales Branch, B.M.A.: Organization and Science Committee.

Medical Appointments.

Dr. A. E. Panting has been appointed Honorary Dermatologist to the Lidcombe State Hospital and Home, New South Wales.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xx, xxi, xxii.

AUSTIN HOSPITAL FOR CANCER AND CHRONIC DISEASES, HEIDELBERG, VICTORIA: Resident Medical Officer.
 DEPARTMENT OF MENTAL HOSPITALS, SYDNEY, NEW SOUTH WALES: Medical Officers.
 IPSWICH HOSPITAL, IPSWICH, QUEENSLAND: Resident Medical Officer.
 MATER MISERICORDIE HOSPITAL, WARATAH, NEW SOUTH WALES: Resident Medical Officer.
 NEW SOUTH WALES MASONIC HOSPITAL, ASHFIELD: Resident Medical Officer.
 PRINCE HENRY HOSPITAL, SYDNEY, NEW SOUTH WALES: Junior Resident Medical Officers.
 REPATRIATION COMMISSION, SYDNEY, NEW SOUTH WALES: Ophthalmic Surgeon.
 YALLOURN HOSPITAL, YALLOURN, VICTORIA: Junior Resident Medical Officer.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Peteraham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Chillagoe Hospital. Richmond District Hospital, North Queensland. Members accepting LODGE appointment and those desiring to accept appointments to any COUNTRY Hospital, are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

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